

THE VETERINARY MAGAZINE

A JOURNAL FOR THE PRACTITIONER, AND FOR THE ADVANCEMENT
OF COMPARATIVE MEDICINE.

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48th STREET AND SIXTH AVENUE,

851 and 853 SIXTH AVENUE,

NEW YORK

THE VETERINARY MAGAZINE.

VOL. II.

NOVEMBER, 1895.

NO. II.

TUBERCULOSIS.*

BY FREDERICK H. OSGOOD,

Chairman of the Massachusetts Board of Cattle Commissioners.

GENTLEMEN :—The time has long passed for discussion as to the cause of tuberculosis, either in man or the lower animals ; its prevalence is likewise pretty thoroughly demonstrated.

The value of tuberculin as a diagnostic agent in the detection of bovine tuberculosis is clearly recognized, and that this agent has no deleterious effect upon animals free from tuberculosis, has also been proven to the satisfaction of all scientific authorities and others who have had practical experience with it.

The Cattle Commission of Massachusetts have tested with tuberculin, in the past twelve months, about 24,000 animals, and of this number they have destroyed as tuberculous, 3450. The percentage of those affected has varied widely in the different sections of the State, from nine-tenths of 1 per cent in Nantucket, to 52 per cent of those quarantined by local inspectors, and in several large herds as high as 95 per cent have been found diseased.

The question now arises, what have we accomplished? The experience of the commission has demonstrated to its satisfaction, that where all the diseased animals have been removed at the first examination made with tuberculin, and the premises thoroughly disinfected, that the herd has remained healthy, as indicated by subsequent tuberculin tests made at varying periods of from six to nine months.

The provision is made by our commission, and strictly insisted on, that after a herd has been tested and all diseased animals removed, the premises shall be thoroughly disinfected,

* Read before the Section on Public Health of the New York Academy of Medicine, New York City, on Friday evening, November 8, 1895.

and that no animal shall be introduced into the herd that has thus been cleaned up with the aid of tuberculin, until such animal has been subjected to the tuberculin test and proved free from disease.

A herd familiar to many in this audience, is that of the famous Deerfoot Farm, largely composed of thoroughbred Jerseys, the foundation stock having been imported from the Channel Islands. Some two years since the entire herd, consisting of some seventy animals, was subjected to the test, some thirty of which responded and were destroyed, the autopsies revealing the disease in all stages. The buildings were then thoroughly disinfected with live steam, bichloride of mercury and whitewash. During the past month the entire herd, eighty-six in number, were retested without a single reaction or trace of disease.

The veterinary supervision of the herd had been in my hands for some years prior to the test with tuberculin. At previous examinations, conducted about once in six months (never over a year elapsing), I had removed, from time to time, advanced cases of tuberculosis, on physical examination.

I could cite numerous cases similar to the above-described. In one of these herds the cowman in charge is, evidently, a phthisical subject; yet, notwithstanding this fact, there has been no case of infection in the interim.

In view of these facts, we have felt that in thus freeing one herd from tuberculosis, we are accomplishing some permanent good, for if the premises are thoroughly disinfected, reinfection is not likely to occur, except by the introduction into the herd of an affected animal. It has been urged that the disease was very apt to reappear from infection through tuberculous attendants, but this is not proved either by the history in given districts, or by direct experiment.

In 1894, our systematic examination conducted on the Island of Nantucket (a county famous in the health statistics of Massachusetts for the very large amount of tuberculosis prevalent in the human family), demonstrated the almost entire absence of bovine tuberculosis. In every instance where the cattle were found affected, the disease could be traced directly to the importation of tuberculous animals from the mainland.

Laboratory experiments indicate that the bacillus from the human subject is much less virulent than that from the bovine.

Comparative microscopical examinations show clearly the rugged, hardy appearance of the bovine, as compared with the slender, bent bacillus of man ; and the growth of the cultures together in the same media, have demonstrated that the bacillus of the bovine kills out the bacillus from the human subject.

In 1864, Villemin, and in 1869 Klebs, produced tuberculosis in calves by injecting tuberculous masses from man into the peritoneal cavity ; but these experiments are directly offset by those conducted by Professor Theobald Smith, who has recently informed me, that with the pure culture of the bacilli, procured from the animal pet of a consumptive man, he had been unable, by injection into the peritoneal cavity of bovines, to reproduce the disease ; and while tuberculisoidin and other antitoxins have marked beneficial effect upon cases of the disease, which result from the inoculation of the bacilli from man, it has no such salutary effect when injected into animals which have derived the disease from the bovine virus. This was confirmed by experiments on three guinea pigs, which had been inoculated with bovine virus, and were afterward treated with one of these preparations furnished by Dr. E. Klebs. After the disease was well advanced the treatment had not the slightest effect upon its progress.

The same results were obtained by Czaplewski and Roloff in 1892. (Berlin, *Klin. Wochenschrift*, No. 29.)

While these experiments may not be conclusive, they all point in the same direction.

The Commission has had a number of remedies offered which were either secret (and on trial found to be useless) or were made of drugs whose action was already well known. The latest of these are in the nature of the so-called antitoxins, to the action of which, on the bovine virus, I have already called your attention. Curative influence with these agents has been noted only in cases inoculated with the weakened laboratory cultures, and even if they were distinctly serviceable in the early stages of the disease, they would be entirely valueless to us, because of the impossibility of detecting the extent of tuberculosis in any given case, by the means at our command.

Tuberculosis differs from other infectious diseases principally in the degree of its activity, being generally of long duration. The infection may be distributed, as is well known, by

most of the secretions and excretions of the animal economy, hence the danger that exists in the immediate surroundings of the infected animal.

It is a recognized fact that in the animal body alone do the bacilli multiply; therefore, if the animals are removed and the stables thoroughly disinfected, we are safe in concluding that the ravages of the disease will be very materially checked. It can only be detected in the early stage and in many advanced stages by the aid of tuberculin; therefore, this agent has become indispensable in diagnosis. It not only reveals the disease in its incipency, but in its gravest and most dangerous types; it does not, however, as a rule, discriminate between these cases. This leads us to the question, what shall be done with the affected animals? Our statutes provide that all known cases of the disease shall be destroyed and the carcasses disposed of otherwise than for food.

It has been urged by the agricultural economist that animals only slightly affected, and not showing the disease on physical examination, might be separated from the herd and their product, either of meat or milk, utilized. This might be, were it not for the danger to consumers; but here the interests of the public are diametrically opposed to those of the agriculturist, for it is now an accepted fact that milk from tuberculous udders generally contains the bacilli in greater or less numbers, and that they are frequently present in the milk from udders which show no appreciable lesion on careful post-mortem examination.

The question of the danger from this product is apparent when we consider that it is largely used by those who are especially susceptible.

Again, if we could distinguish those cases where a single gland is affected, this danger from the milk supply could be easily removed. But our experience has demonstrated that in many instances it is impossible, upon physical examination, to determine whether an animal is tuberculous, whether it is extensively tuberculous, or whether it is entirely free from the disease; hence the suspicion which rests on all milk from untested herds.

The aim of the Commission in Massachusetts has been to advise legislation, based upon their present knowledge of the disease, that should not be oppressive to the agricultural

community, but at the same time safely guard the interests of public health.

The action of our Legislature resulted in the passage of a bill which was signed by the Governor on June 5, 1895, which removed from the individual owners any hardships, in that it provided for the payment from the treasury of the commonwealth for the value of all tuberculous animals condemned by this commission ; but it left it optional with the owners whether they would take advantage of tuberculin as a diagnostic or not. It thus failed to afford any protection to the tax-paying consumer, since it left the eradication of the disease from the herds furnishing our city milk supply entirely at the option of the producer.

It has been but a short time since we were able to detect, with any accuracy, the presence of tuberculosis in the bovine species, but now, having an agent that will reveal the disease in its earliest forms, are we justified in advocating measures which leave the eradication of the disease to the option of interested owners ; and are we further justified in continuing to allow the milk product from animals to be placed upon the market without certification of the animal's health, based on tuberculin ?

Our legislative bodies have passed stringent regulations as to the adulteration of almost all food supplies, extending the same to cover the introduction of foreign material into the milk as a preservative ; but they hesitate to enact and enforce stringent laws that shall apply to the marketing of milk which is not free from suspicion of disease.

It is not my wish to convey to you, for a moment, the idea that I believe the milk supply is responsible for the greater part of tuberculosis in the human family ; I simply desire to point out that it is an important element of danger that can and should be removed.

Sanitation has already exerted a great influence in the reduction of the mortality statistics in the human family, and similar laws should be enacted regarding the conditions under which animals are allowed to be kept. Owing to the prejudice that many farmers have against the admission of fresh air into their stables the atmosphere is particularly foul, being permeated with the organic emanations from the animals. I believe if the loss of life among animals in this country, due directly or

indirectly to confinement in an impure atmosphere, were obtainable, the results would be sufficiently appalling to call for immediate legislation.

Men should not, either from ignorance or indifference, be allowed to shut their animals up in places not big enough for a human being to live in, or to make them breathe contaminated air, either through their personal ignorance or carelessness.

It is no argument that because it is his own property a man should be at liberty to do with it as he chooses, and certainly not if he markets the products from such animals. Why should a man be allowed to run the risk of communicating disease to the human family, or to other animals with which they may come in contact. Our laws provide a penalty for selling a glandered horse, or leading him over the public highway; why should it not provide a penalty for owners of animals who refuse to provide their animals with such sanitary surroundings as science demonstrates that they require. No person should be allowed to breed disease among his own animals, or risk the property of others and the lives of human beings.

In the city of Boston there is scarcely a week passes that prosecutions are not instituted, and convictions secured for the sale of milk that is deficient in solids (in the majority of cases to be accounted for by the addition of water) while at the present time there is no law in the commonwealth to prevent the owner of an animal, affected with tuberculosis (providing such diagnosis could not be made upon physical examination) from marketing the milk from such animal, and no restrictions whatever to the importation of milk from beyond State lines.

Many of our western cities have already instituted regulations providing that parties desiring to sell milk within their limits shall not receive a license so to do until they have proved, by a certificate of tuberculin test, that their animals are free from tuberculosis; and the city of Rome has a similar restriction.

With the wild West and the most typical of the "effete" nations of Europe thus joining hands in the protection of public health is it not time for our enlightened (?) eastern cities to agitate the question continually until at least equally efficient measures are adopted here?

If the State cannot institute in its legislative halls regulations providing for a pure milk supply, it certainly devolves upon the health officers of municipalities to make regulations sufficiently stringent to protect the consumer from such a suspicious product as that obtained from milch cows throughout our New England States, until such time as they have been pronounced free from disease by the tuberculin test.

TABULATED SUMMARY OF THE WORK OF THE CATTLE COMMISSION IN
MASSACHUSETTS.

Under the Law of 1894, to December 15, 1894.

		Condemned.	Per Ct.
Inspectors' quarantine	3295	810	24.58
Quarantine stations	1432	89	6.21
Nantucket (Systematic)	665	6	.9
	<u>5392</u>	<u>905</u>	

From December 15, 1894, to January 5, 1895.

Inspectors' quarantine	1776	795	44.1
Systematic inspection	3500	6	0.17
Quarantine stations	6270	251	4
Interstate cattle	314	5	1.6
Veterinarians (private tests)	1518	289	19

Laws of 1895. June 5 to November 5, 1895.

Local inspectors' quarantine	1243	643	52
By voluntary request	1894	510	27
Veterinarians (private tests)	504	90	17.3
Quarantine stations	900	35	3.9
Interstate cattle	400	11	2.8
Errors due to tuberculin since June 5			0.1

Under the law of 1894, 2250 animals destroyed; average, \$21 per head (half appraised); total, \$47,000.

Under the law of 1895, 1200 animals; average, \$36 per head (full appraisal); total, \$41,000.

Returned directly to the farmers, \$88,000.

WHAT I HAVE FOUND IN VETERINARY ASSOCIATIONS.¹

BY W. HORACE HOSKINS, D. V. S.

MR. PRESIDENT, FELLOW MEMBERS AND COLLEAGUES :—In speaking to a subject such as this, it is unnecessary for me to say how very strong are my feelings, how ardent my interest and devotion to this part of our work. My record among you as a fellow practitioner is too well known on this contributory feature of our daily duties. Yes, it is true, this is Hoskins's fad, I hear it whispered from one to another, and my warmest wish for you one and all is that I shall be able to say something to so express to you my sincere convictions on this point, that it may become your fad as well as mine. I will not deny the selfish interest I have had in this movement, only to lay before you extenuating reasons that will win your acquiescence and approval. With a record such as I have of having missed no meetings of our grand national organization since I have been a member ; no sessions or conferences of any of her committees on which I have from time to time been honored ; having attended every meeting of our State organization since its birth, and every meeting of all committees to which I had by election or appointment been made a member ; having attended every meeting of my College Alumni Association since a graduate of the American Veterinary College, and every post of duty to which I was assigned, in season and out of season ; with a record of but two absences from this Keystone organization since its birth in this city some thirteen years ago. Yes, I answer a second suggestion one feels like making to another, that this reason, this selfish aspect of such a record, must be a very strong one, and if you are not convinced of its merits when I have concluded my subject, then, fellow colleagues, I shall listen with greater zeal, more intense interest in your reasons and conclusions, and be a willing and devout follower of a better plan to make me a better devotee of the science of veterinary learning.

My reason for this record is wrapped up in one sentence :—I have known no better plan to become a truer, better, more successful worker and practitioner in all that makes up a complete

¹ Read before the Keystone Veterinary Medical Association Meeting, October 8, 1895.

veterinarian than by steadfast devotion to the work of these associations. The only post-graduate course I have had the privilege of attending, I have found in my association privileges.

But what of the fact that many of these meetings have been failures, the program of instruction absent? Well, first let me reply that it was not because I had faltered in my part; it was not because I was absent and had not accorded the essayist the courtesy of my presence to listen to his effort to discharge his duty. Again, on each one of such occasions I have had the pleasure of mingling with one or more of my fellow colleagues, and I have gained some general information thereby that I have been able to turn to the good of my clientage and calling, or I have been acquainted with some fact or elicited some information that I have been able to utilize for my own selfish advancement, or to make inure to the stronger position of my fellow practitioner in his community, and thus contributed to my calling—a duty that I pledged it the day of my entrance upon its field of work.

My association privileges have taught me forcibly that there was nothing ever gained by contributing to a lower estimate of my fellow colleagues' ability when assailed by some thoughtless or unreasonable client, for in after hours, when sober thought returns, he is apt to think that, well, that is what he thought of him also; and when I perhaps was asked to accomplish the same impossible feat in the domain of our science, he is apt to conclude, well, they are all of one kind, and for this my profession must be burdened and its strong shoulders bent with a load that it should not have received.

I have never forgotten a lesson once learned when a boy in the little village where I was born; where there lived a good-for-nothing fellow whom everybody had a kick or a cutting criticism for, without any trade or special avocation, but eking out a living by all sorts of jobs and chores. I noted one day in the felling of some trees by one of our foremost citizens, whose ability was conceded in all directions, that he was not able to control the direction of the fall of the trees he was removing, when our good-for-nothing jack-of-all-work proposed to show him how to accomplish what he desired, much to the amusement and criticism of one and all; but yielding to his importunities the ax was handed him, when in one, two, three

order he felled as many trees and laid them down in the directions desired and first indicated. The lesson learned here I have many times verified in association circles ; that there was no veterinarian but from whom I could learn to do some part of my work in a better way than I had been in the habit of doing it, and this is what I need. The stronger these association meetings have been, the greater valuation of this post-graduate instruction.

I hear another say, Well, what of the numerous quarrels and controversies? what of the bickerings and criticisms? Well, these have all been unpleasant ; they have all been detrimental for a time to our united work, but they have all done some good ; from out of the clouds and ebullitions and smoke and fire there has pierced through the clear sunshine, or there has emerged forth the burnished metal, stronger and better than before. They have been battles for common rights and privileges, they have been waged that all might be placed upon an equal footing, from whence we could win honor, fame, admiration, money and all else we could desire, only by superior merit and ability, which should and always will be rewarded. They have been made and defended because some great principle was at stake, and I have noted always that the profession when on the right side has lost nothing in the end, but grown stronger and higher in place and position for these battles. I have not found that the individual who may have stirred up these battles or strife has ever benefited by them as much as he thought he would, but I have noted that he has grown narrower and more selfish, and his sphere of usefulness and worth confined to narrower limits, and that his profession in public estimation has suffered materially, when he would not bend, but had to be broken, and his association ties rent asunder and broken forever. A man in any calling or association without the good will and support, the honor and esteem of his co-workers, is to be pitied in any sphere of life. The old adage of "Honor among thieves" is more beautifully portrayed in the various spheres of life as they rise higher and higher in their usefulness and worth. A man without the good opinion of his community or people is a stranger in his own land and home. A veterinarian without association ties and fellowship soon becomes a professional outcast, a parasite of his calling ; for he only lives to rob it of all its fruits and privileges, and then dies

unlamented, and is soon forgotten. Living the life of a parasite himself, he soon mirrors his fellow workers in the same glass he sees himself, and mean acts and advantages taken of his fellow men and colleagues return to make his life unhappy and a burden, and he finds no peace or joy in the occupation of his selection, that should have brought him honor and renown. The greatest and most successful men are measured in the too common rule of the day, by their wealth and accumulations, and are living exponents and examples of the true nature of men to love honor, fame, renown or public admiration of some nobler qualities than the mere faculty of attaining riches; but the long years of narrow selfishness, greed and unfair advantages of their fellow men leave them only one avenue to attain respect and honor in realms of the Church, the State, the field of literature, of politics, or among the devotees of science in all its varied directions, that is by purchase, not by merit, or the united consent and approval of the true devotees in these various walks of life; and honor, fame, renown, or place so gained proves empty of the fruits and feelings which they yearn for, and the latter days of their existence are not mellowed and brightened and illuminated by the devotions that we every day witness of the true satellites of religion, science, politics, art, etc.

Association circles have enabled me to find some redeeming quality in every individual I have ever been privileged to mingle with as such; false and unjust opinions of these men have been wiped away by association relations; the tongue of criticism has often been silenced; the unfair, unprofessional methods of obtaining a clientage have been thus halted and controlled; the good will and friendship of men in many communities been sustained and preserved; and the peace, happiness and general morale of communities contributed to in no small way by the strength of fraternal feeling engendered and preserved by these associations. The common purpose, the single desire, the steadfast determination to do the most good for the greatest number of people have been fostered by these organizations, and enriched our people in every direction that makes a nation healthy, wealthy and wise. The strongest argument of the good of these associations is daily exemplified in the living expression and exhibition in practice that they demonstrate of the golden rule, "To do unto others as you would have them

do unto you ;" and these relations, these admired features by every man, woman and child, are maintained by a mutual compact of men without legal or penal fetters for their sustenance or keeping.

What none of us could ever accomplish alone has quickly been achieved by a union of our strength, and what has been attained by association efforts for the profession has been of benefit to me, directly or indirectly.

What association can accomplish is best exemplified by our parent organization, the United States Veterinary Medical Association, whose precepts, examples and admonitions are admired, followed and obeyed by the profession at large, as well in the State of Washington as in Maine, as thoroughly in Minnesota as in California ; and her every movement and action watched by zealous eyes in every veterinary educational centre in North America. Her members are a strength and power in every community, and her seal of membership a badge of honor and distinction in every part of our land. She has been honored by the encomiums and praise of leading men in the highest places of our country. But a few days ago I listened with mingled pleasure and delight to the remarks of one of the best known veterinarians in our country, when he paid this organization the high compliment of publicly proclaiming how highly he prized the support and sustenance of this organization, and what a tower of strength it had been to him when appealing for public recognition in the halls of Congress. What a compliment to her worth and the integrity of her purposes, when we find her members in the remote centre of our country bowing with honorable submission to her decrees and decisions, and this with no legal or penal requisites to enforce her rulings ; only that high appreciation of her worth and the honor of good standing among her roll of membership.

Her decision as to requirements for membership was followed by one college after another, so arranging and strengthening their curriculums to make eligible for membership their graduates, and rapidly led to the Association of Faculties of North America, now one of the strongest and most powerful mutual organizations ever created in our land, and that has won for our profession already a higher appreciation and position of worth all over the world.

I hear another say, Well, that is all pretty in theory, and might be the ideal of us all, but there is the practical side of the question to consider.

Well, let us look at it for a moment on the side of a good investment and what it will represent at the end of the year on the profit and loss side of our books. Pardon first a few words about the injustice of this aspect of such a subject in a professional avocation of life where the question of life is at hazard both of the animals within our special domain and their relation as food products to the health of our people as a nation ; their happiness in the health attained when freed from the dangers that lie in the use of these products ; when given a richer return on their capital invested in stock from which they obtain a livelihood, and by which is limited their purchasing power of those things which contribute to all that makes life worth living. This aspect is no less ours than the human physician, and we tread very close to the line of grave negligence when we ignore any avenue of information that will better fit us for the work that is ours. Moving away from this digression to the dollar and cents side of the question, and I will ask you to admit, for the sake of argument, that not one of you lead a busier life than the writer ; and for a fair estimate I will say I give one day each year to my Alumni Association, three days to my State Association, ten evenings to this organization, and one week to our national body ; a total of eleven days and ten evenings, or allowing that the evenings represent a half day each, or five days, making a gross total of sixteen days. Surely this is not a very great vacation for one who has more or less work to do every day in the year ; well, granting that this means an average loss of twenty dollars a day, a gross total of three hundred and twenty dollars, to which we will add one hundred dollars expenses, making a gross total of four hundred and twenty dollars direct loss. Now, I have had but one year in my professional career that my practice has not increased this amount in the gross total, and I have had no year when I did not feel that it was easier to do more work, and that I approached my clientage with a more secure feeling of being able to render them better service, and thus serve my profession in a truer and more exalted light. Would one of you for a moment exchange such a feeling, such a true pride in your work, for such a pittance ? Is there one here within the sound

of my voice but what would think that a good investment. It was no loss, for it came back to me each year in increased earnings. It returned to me in being able to do my work quicker, to accomplish more in a given length of time, and thus served my interests in many ways. It gave greater confidence to my clientage, greater security in the capital entrusted to my keeping for preservation and restoration. It brought me two new clients for every one lost while absent, and assured them that I was leaving no opportunity unused to make my services of more worth to them. It taught me how better to plan my work so that in any short absence it would be best taken care of; and I might go on and enumerate many other points to lead you to agree with me that the investment was a good one from a monetary point of view.

I will now keep you but a few minutes longer, only sufficient a period of time to recapitulate the value of association ties :

1. I have not been able to properly conduct my professional work without the aid of association fellowship.

2. I have made among my colleagues over the entire country many warm friends, whose friendship and fellowship I prize highly.

3. I have by mingling regularly with them learned of new methods, new ideas, better and easier plans for doing many things, and kept myself thoroughly informed of what the world is doing.

4. I have strengthened myself in every way, and learned to afford my clientage much information that has awakened in them a keener interest in my profession, and thus strengthened my own position.

5. I have found in them a place to settle all disputed questions of an ethical or business type, where only justice and equity prevail.

6. I have found that associations can do more for the profession in such bodies than we can do individually, and thus make us all stronger before the people.

7. I have found there a place to first settle all our little differences as to methods, etc., and in dealing with public questions, and then to be able to ask for support of these measures as the expression of a body.

8. I have found them a good investment where I can draw a larger return than elsewhere.

Without them there can be no true progress of any calling ; there can only be discussions and differences of opinion without any court of settlement, and selfishness, greed, malice and every other undesirable trait become rampant in the chaos that prevails.

QUARTER-CRACK: ETIOLOGY AND TREATMENT.

BY FRANZ ENGE,

Demonstrator of Shoeing in the Veterinary Department of the University of Pennsylvania.¹

While the wall or "crust" of the horse's hoof has been arbitrarily divided into five definite areas known as, an outer and inner "quarter" an outer and an inner "side" or "mamma," and the "toe," and cracks or fissures in the horn of these areas have been designated respectively quarter-crack, side-crack and toe-crack, yet it is customary to speak merely of toe- and quarter-cracks, the latter being situated either in the quarters or in the sides of the wall.

Quarter-crack is an affection of the hoof which is frequently induced by excessive or injudicious work upon hard streets, and demands our most careful attention, especially in its incipency. Although in many cases lameness is not an immediate result, yet even these cases require thorough inspection and rational treatment.

Depending upon the depth of the crack, we distinguish two kinds, the *superficial* and the *deep* or penetrating. The deep cracks are always the more dangerous, because they pass entirely through the wall into the sensitive and vascular soft tissues within the hoof, giving rise to inflammation of varying degrees of intensity and accompanied by pain which may be so severe as to unfit the animal for its work. Septic infection not infrequently takes place through a deep crack in the hoof.

On the other hand, a superficial crack is much less serious ; it passes but part way through the thickness of the wall and seldom, perhaps never, causes lameness ; but by reason of its weakening the wall it may, under unfavorable circumstances, become a deep crack, and so should not be entirely ignored.

¹ Amended and illustrated by J. W. Adams.

Causes.—The causative influences are various ; several may act simultaneously or conjointly to produce this disease. As a rule, however, the hoofs most apt to “spring” a quarter-crack are those in which one side or quarter of the foot sustains more than its share of the weight. Such hoofs are not of normal or ideal form ; they are usually too nearly perpendicular on one side and too slanting on the other. As examples, I may cite the base-wide and the base-narrow hoofs, including the toe-wide and the toe-narrow forms ; hoofs contracted in one or both quarters ; hoofs which have been so improperly trimmed as to leave one side short (low) and too nearly perpendicular, while the other remains long (high) and is, therefore, too slanting (oblique) ; and the hoof with a long toe and a low heel. The vicious practice of lowering the quarters, after an open shoe has been fitted, till the quarters are unsupported from below, is frequently responsible for cracks beginning at the coronary band. Drying out of the horn favors the formation of all cracks. Saddle horses which carry much weight at a trot or gallop upon hard roads are especially liable to this affection. Wounds of the coronet are frequently followed by a crack.

Quarter-cracks occur oftener in the forefeet because of the greater weight borne by them and the greater consequent expansion of the quarters. It follows, therefore, that cracks occur oftener upon the inner quarter which, even in a normal limb and foot, bears more weight than the outer quarter, and has a thinner wall.

As already mentioned, certain abnormal positions of the limbs favor the production of cracks, chief among which is the *base-wide or ground-wide position*. The reason for this is very evident. In the base-wide position of the limbs the inner quarters must sustain even more weight than when the limbs are of normal (perpendicular) direction ; the inner wall is more nearly upright and weaker than is normal. Under these conditions the inner wall wears away faster than the outer, so that the weight is shifted more and more upon the inner half of the foot as this unequal wear continues.

In trimming such a foot more horn should be cut from the outer side and quarter—where the wear has been less, than from the inner side. This unequal wear is, however, seldom recognized by the shoer ; as a rule, he proceeds either to cut

an equal amount of horn from each quarter, or he so trims the quarters as to leave the heels of equal height. In either case he makes a mistake, for, removing the same amount of horn from both sides at each shoeing, making no allowance for wear on the inner side, gradually results in a high outer and a low inner wall with the weight falling largely upon the inner half of the foot; while, if he makes the heels of equal height he disregards the fact that the outer heel and quarter of a base-wide foot is normally higher than the inner one. The first mistake would be much more injurious in its effects upon a quarter-crack, or, in fact, upon any inflammatory lesion upon the inner half the foot, than would the second.

Treatment.—Concerning this there are many different opinions. Inasmuch as I have had rather unusual opportunities for observing many of these treatments, and have myself successfully treated a large number of horses affected with quarter-crack, I will describe the method that has proved most satisfactory to me.

Immobilizing both edges of the crack prevents rubbing and tearing and favors healing of the divided sensitive tissues. This fastening may be accomplished in many ways and I will mention the most valuable. The easiest and most effective method of immobilizing a quarter-crack is by the use of a thin metal plate applied as shown in Figure 1.

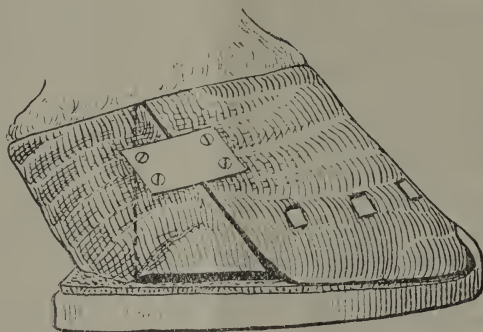
As can be seen, this plate is placed about one inch below the coronet where the wall has its full thickness. The anterior and posterior borders extend in the direction of the horn tubes, and the upper and lower borders are parallel to the direction of the coronary band. The plate is heated to a cherry red, placed in position and pressed against the horn till it has burned for itself a bed, then fastened by four small wood screws, whose length equals the thickness of the middle layer of the wall, *i. e.*, just long enough to pass through to the soft white horn which forms the horny leaves. There should be one screw in each corner of the plate. After two to three shoeings the plate must be moved up till, finally, the end of the crack is near or under the plate.

Another method is that of nailing the crack, using either small, round wire nails or the ordinary horse-shoe nails. But in doing this great care must be exercised, because the posterior part of the quarters is quite flat, and there is great

danger of either directly wounding the sensitive tissues, or indirectly wounding them by crowding in upon them the soft horn from which spring the horny laminae. Nailing is more easily accomplished when the crack is at the toe or at the sides of the hoof, where the wall is more convex and thicker than near the heels.

Quarter-crack straps and strong muslin bandages are each of especial service where a crack does not follow the direction of the horn tubes, but runs in an irregular, zigzag direction with overlapping edges. Before applying the strap or the linen bandage the borders of the crack should be well thinned, but we should avoid causing much bleeding. The horn about the

FIG. 1.



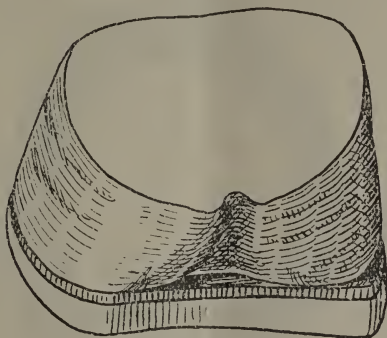
Crack in inner quarter of left fore hoof fastened by a metal plate and screws.
The dotted perpendicular line and the lower end of the crack mark the points between which the wall should be lowered.

crack may be kept soft and pliant by placing under the strap or bandage a pad of cotton or oakum which has been drenched with such an antiseptic as turpentine or wood-tar. Thus applied, the strap may be left in place for several days and nights, while the bandage may remain in place from one shoeing to another unless it should become loose. It should be about two and one-quarter inches wide and two yards long, and sewed at the end with strong thread. To make this bandage tight and keep it in place we should wet it before applying and afterwards smear it with wood-tar.

Of much greater importance than immobilization of the edges of the crack is to so trim the hoof as to secure a certain distribution of the body weight which has proved to be most

favorable to the healing of the lesion. The foot should be so trimmed that the side containing the crack shall be the first part of the foot to touch the ground in locomotion. Then, as the foot settles, it will tip slightly toward the sound side, which will thus receive more of the body-weight than is borne by the diseased side. The plantar border of the sound side should be lowered so much as to cause unequal wear of the branches of the shoe. The wear will be more rapid on the branch supporting the diseased quarter (see Fig. 3). If by reason of a paucity of horn on the healthy side of the hoof it is deemed in advisable to lower it further, we may accomplish our purpose

FIG. 2.



Posterior view of Fig. 1, showing the inner diseased quarter slightly raised upon the thickened branch of the shoe. The foot is tilted over toward the sound side.

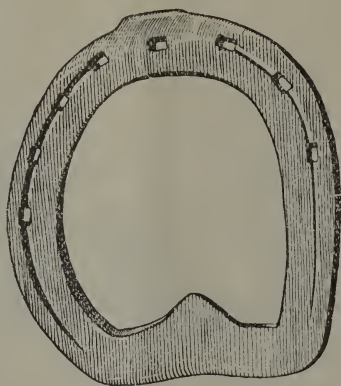
fully as well either by thickening the branch on the diseased side, or by interposing leather between the horn and the shoe (see Fig. 2). At the next shoeing, four weeks later, the diseased side should not be touched with hoofknife, rasp, or hot shoe, but the sound side should be lowered. The thickened branch or the interposed leather will now be superfluous, and we may properly apply a barshoe with a leather sole, which are best suited to this condition.

A procedure of much value in connection with any mode of shoeing for the alleviation of the lameness of quarter-crack is the lowering of the wall behind the crack, so that it will not receive pressure from below. The wall should be lowered from the point where the inferior end of the crack intersects the plantar

border, or would intersect it if prolonged, backward to the base of an imaginary perpendicular line dropped from the upper end of the crack (see Fig. 1). This length of the border of the wall should be lowered about one-eighth of an inch, so that it will not touch the shoe from one shoeing to the next. Or, if there is too little horn present to allow such a shortening, the shoe may be concaved on the upper side for an equal distance.

If the frog is small or atrophied it should be developed by constant pressure, and it may be advisable to attempt to spread the heels by the additional device of giving the upper surface of the branches of the shoe a slight outward slant.

FIG. 3.



Ground surface of a right front shoe after six weeks' wear under a hoof having a crack in the inner quarter. The inner branch of the shoe (on the right hand in the figure) was thickened to raise this side of the hoof and its greater wear is shown by the narrowness and shallowness of the fullering. Observe, also, the straitness of the inner branch at the quarter.

On the sound side the shoe should follow the border of the wall closely from the toe to the buttress, but on the diseased side from the quarter to the heel it should extend beyond the wall far enough to touch a perpendicular line dropped from any point in the coronet. This is especially important when the diseased quarter is contracted, as is usually the case.

No nails should be placed near the crack, but on the sound side they may be driven farther back toward the heel than usual, and one may be placed on the toe (Fig. 3).

The Hallanan Columbian rubber footpad and the Hartman rubber pad are of value in the cure of quater-crack by taking

some of the body-weight from the wall and distributing it uniformly over the frog and sole.

Horses which must travel fast over paved streets should not be worked till the crack is no longer noticeable for a distance of three-eighths of an inch below the coronary band. During this period of rest the foot should be cooled by immersion in cold water, the horn kept soft and the crack frequently painted with laurel oil.

PREScribed EXAMINATIONS FOR ADMISSION TO VETERINARY COLLEGES.¹

BY JUNIUS H. WATTLES,
Kansas City.

MR. PRESIDENT AND GENTLEMEN:—The subject of this address is ostensibly the results that have been obtained by prescribed entrance examinations, but as the subject is to-day largely prospective so far as my individual experience goes, my fellow members will pardon me if some digression is made, and I consider some of the results that may be obtained by having positive and fixed lines upon which to conduct entrance examinations, as well as some of the conditions that exist, and evils that might result, were each school allowed to act as its own censor in matters of matriculation and graduation.

With the organization of the several faculties of the veterinary colleges of the country into one ASSOCIATION OF VETERINARY FACULTIES OF NORTH AMERICA, our fraternity and the public had every reason to believe that a new era had dawned upon our profession, and that while the pathway might not be strewn with roses, that the way was clear for kindred professions to see that we were entitled to stand in the front rank of the learned professions, and that we were capable of maintaining that rank.

¹ Address to the Association of Veterinary Faculties of North America; Des Moines, Iowa, Sept. 10, 1895.

With solely fraternal and educational objects in view, the association of faculties was formally organized in Philadelphia last September, and to those who had the pleasure of attending that meeting there will always remain a remembrance of the kindly spirit in which all of the deliberations were maintained.

Without acrimony or intemperate language, and with a full and generous consideration of the many different conditions and surroundings of the several schools, the constitution of the association was adopted, and I sincerely believe that we meet again to-day with equally liberal views on the subject of advanced education.

There is no reasonable doubt existing in the mind of any impartial and disinterested person of the necessity of a higher standard of educational requirement in the matriculation examinations of our prospective students, and we can all see very plainly that it is only a matter of a very short time when every college that will be recognized as coming up to the standard will have adopted a minimum grade for the admission of students. With these points so clearly in view, and with the upward and onward tendency of the leaders in our profession, and with positive knowledge that different States are formulating laws regulating veterinary practice, it seems to me to be but a rational conclusion that the proper thing for us to do is to act in the matter at once, and not wait until compelled to act, and for all of the colleges of this continent to unite with this association in endeavoring to create a certain standard of admission of students, of advancement in their studies, of time that they shall attend, and for final graduation.

By having positive rules for the admission of students, every one will be satisfied that the gentlemen who graduate are capable, educated men. We will then be assured that men are not allowed to graduate simply because they have been in empirical practice for a time, or because they are druggists, or because they hold some classical, scientific or literary degree, or a diploma from some normal school; on the contrary, we will know that they are men that have been educated for the veterinary profession, in veterinary colleges, and are capable to practice in that profession.

It is important to us all that the moral character and business principles of men about to enter our profession be inquired into before they are allowed to matriculate. My belief is that every

applicant should be required to fill out a printed blank, agreeing to comply with all of the rules of the college he wishes to enter, and also agreeing to comply with the code of ethics of the State in which he may practice. This surely would be no hardship to any honorable man, and we do not desire any other in the profession. It is surely a very embarrassing thing for us in our practice to come into contact with men that are graduates of recognized colleges, and to feel that we do not care to affiliate with them because of some of their underhand business methods, or because they are drunkards or gamblers; and it seems to me that close scrutiny should be made of applicants before admitting them as students.

One very important matter that needs the close attention of this association is the actual time of attendance of students. It seems to me to be ridiculous to say in an announcement that we require attendance on a certain number of courses of six months each, and then to allow men to attend only a fraction of the time. To illustrate this phase of the subject: Suppose a student enter in November, 1893, and is allowed to come up for final examination the following spring and is passed, the student's name appearing in the list of graduates in the catalogue issued in 1894, could this student have attended more than four and a half months, actual time?

Suppose the fact exist that schools were in the habit of allowing men to appear for final examination at the end of one school year, and even the year shortened by the late appearance of the student. Could a student acquire sufficient knowledge in so limited a time to become proficient in our science? The man usually applying for time allowance is one that has been in practice in some small town where there has been no qualified practitioner. The appearance of a graduate from some college forces the older man to protect himself by gaining a diploma, or else he is forced into college by State laws. My experience with these men, as students, is that they are the slowest to grasp ideas in school, and make the poorest practitioners when out.

The requirements of the college that I have the honor to represent, during the first two years of its existence, were the same as in other two-year colleges; and I can look back over our brief existence and see nothing to regret, except that we admitted, during our first two years, men that had been in

practice for some time, and allowed them to appear for final examination at the end of the first year. Happily for us, we were soon satisfied with the experiment, and the practice was discontinued: During the same period we allowed licentiates and graduates in pharmacy to enter the senior class, but we soon discovered that the time was too limited for them to acquire sufficient knowledge, and this practice was also abandoned.

For the past two years our matriculation examination has been up to the standard required by this association, consequently we were in no manner disturbed by adopting the rules of this body; and unless my judgment is very much at fault, there is not a college in America that would not be benefited by adopting the same rules, and maintaining a rigid adherence to them.

All applicants for matriculation in this college are now required to fill out the printed application blank furnished by the school, in which they agree to conform to the established rules. All applications for admission are acted upon at a regular meeting of the faculty, and the application must be approved by three-fourths of the number present at such meeting. This takes the responsibility out of the hands of one man, and places it where it justly belongs—in the hands of the entire faculty. We require an actual attendance upon 80 per cent of all lectures, and no student is allowed to come up for examination who has not attended the required percentage. This does away with the practice of students entering and leaving school at will, or of inattendance upon lectures and other forms of instruction.

Every inducement is held out to our students to take the three-years' course, with the result that 50 per cent of those who entered last year have accepted, and fully as large a percentage will begin the three-years' course this session. As we have not felt strong enough as yet to put on a *compulsory* three years' course, we have met the condition as far as we possibly could by making an optional course of three years, from which it is but a short step to the regular course prescribed by the representative body of our profession, and now adopted by the leading colleges of America.

With the firm conviction that in union there is strength, and with every desire to advance the interests of our profession,

with the belief that it is only by union in action, kindness in our discussion, charity to all, that we can reach the goal of our ambition in our life's work, I thank you for the honor you have conferred upon me by giving me your attention.

Since preparing this address for this association, the Kansas City Veterinary College has decided upon a *three-year compulsory course*, beginning January 1, 1896. This present session is the last during which students will be admitted for a two-year course.

JUNIUS H. WATTLES.

REPORT OF THE COMMITTEE ON DISEASES.¹

BY M. R. TRUMBOWER, Chairman.

In making this report, I have made an innovation, inasmuch as it is a medley.

My colleagues, Drs. Reynolds, Harger, Faust and Dinwiddie, will each contribute special reports on "Specific Diseases." I have endeavored to obtain reports in a general way of the prevalence of diseases, etc., throughout the United States, and will give the interesting sections selected from the numerous replies received. Some of the reports and opinions offered may be conflicting, but I believe that in drawing attention to these conflicting opinions, we may open up a field for thought and criticism, and thereby gain more than we would by taking the old cut and-dried method of generalizing too much.

If it were not for making this paper too long, I should like to go somewhat into the details of the history of preventive inoculation, and especially that of the anti-toxin fad. The theory upon which this new theory is based, is an outrage upon all known physiological and anatomical knowledge, and the veterinarians who associate themselves with the advocates of this extraordinary hallucination will surely, within the next ten years, regret the support they are now giving to it. Trusting that many of these subjects may be brought up during this session, I shall now make reports from the various States:

Alabama.—Dr. C. A. Cary, of Auburn, writes as follows: "A number of veterinarians and others have written reports upon *Bursattee*, the India disease, as occurring extensively in the South. I do not believe there is any such disease in the United States, and call upon its discoverers to prove its existence in the United States."

I take pleasure in joining Dr. Carey in the request.

California.—Dr. R. A. Archibald, of Sacramento, writes: "Anthrax, tuberculosis and glanders, are very common in this State, especially anthrax, which exists in the form of

¹ Read before the United States Veterinary Medical Association in September, 1895.

splenic apoplexy, and destroys an enormous amount of live stock yearly in the central and southern portions of the State. It appears in a more benign form than in the Eastern States."

Colorado.—Dr. Charles Cresswell, of Denver, reports as follows: "As to the prevalence of tuberculosis, I may say that only one case has been reported during the year and proven by the 'tuberculin test,' to be this disease. True, we have not as yet thoroughly examined all the dairy herds of the State, but those around Denver and a few of our cities are now under the inspection of the local boards of health. I think I am safe in saying that the disease is absolutely non-existent among our range and our breeding herds. There may be a few cases among the dairies which have not come to our knowledge, and if so, we have no doubt that they are imported stock. My experience of seven years in this climate leads me to say that judicious outcrossing of families hereditarily predisposed, and the peculiar advantages of this climate, cause animals to become to a very large extent, proof against this disease.

"Glanders has existed in the State during 1893 and 1894; twelve cases in 1893, and seven in 1894, but all resulted from an importation from St. Louis a few years ago. Very many cases of catarrh, simple and malignant, at this altitude assume a chronic form, which has many of the characteristics of glanders, and we believe that in the past a great many of such cases have been wrongly diagnosed as glanders. At present, I do not know of the existence of this disease in the State. I do not hold the view that glanders can be so modified by the climate of the Rocky Mountain region that it can assume the mild form described by some observers, nor that any such form could exist to any extent, because the great changes of temperature always existing here, would be sure to cause a malignancy at times which could not be mistaken, and which would distribute the disease to a far greater extent than it now is. Such cases as have been reported as a mild and latent form of glanders, we believe to be nothing more than the chronic, malignant form of catarrh above noted. This opinion has been verified in Colorado by many post-mortem examinations, and by the 'mallein test.'

"Except among the garbage-fed hogs near our large cities, until last year we have had very little cholera, but last year, owing to the drought in Kansas and Nebraska, a great many

store hogs were brought from these States into Colorado, and with them the disease, and I am afraid we now have several localities more or less permanently affected.

"During the last three years we have inspected over 650,000 Southern cattle, which have passed into or through this State, without the occurrence of a single outbreak of Texas fever. The quarantine against Southern cattle is vigorously carried out by special inspectors appointed by the Board.

"I think that if our County Commissioners can be prevailed upon to see that the carcasses of all animals which have died from anthrax or anthracoid diseases are thoroughly disposed of, in order to prevent contamination of the soil, we shall be able in the future to report a death rate from such diseases of less than one-third of one per cent. We endorse Pasteur's system of preventive inoculation for anthrax and anthracoid diseases.

"Spasmodic dyspnea is a disease peculiar to the Rocky Mountain region, and is characterized by great difficulty of breathing on exertion. It finally causes complete asphyxia and collapse if the animal is urged to a gallop. It is due to contraction of the muscles of the larynx, dependent upon disease of the pneumogastric nerve. The spasm gradually increases in severity, and causes death of the animal in from one to six months. It is confined almost exclusively to range horses, and to special localities. Six outbreaks in the State have come to my knowledge during the past two years, with a loss of about 250 horses.

"The loss of sheep from scab is serious, and demands vigorous and continuous handling for its complete eradication. Immunity from outside invasion should be guaranteed.

"Losses from poisonous weeds and grasses on the open range are unavoidable, and must be for the most part accepted as one of the penalties of the range business. Such poisons are not, as a rule, eaten by any animal unless the wholesome grasses are scarce. At times in the year poison plants are ahead of other vegetation in growth, and are then more dangerous to the semi-domesticated animal, in which the faculty of food selection is not so well developed. Closely allied to the poisonous grasses are various forms of saccharin plants in their early or stunted development. In one period of the growth of the sorghum plant, when conversion of the vegetable starch into sugar is taking place, the plant is poisonous. I investigated

several deaths from this cause during the year, when the excessive drought and early frosts had stopped the growth of some fields of sorghum which were not protected from the open range."

Delaware.—Dr. H. P. Eves, of Wilmington, writes as follows: "Within the last two or three years we have been troubled with a slight outbreak of Southern or Texas fever. Glanders within the last year has caused more or less trouble. I can report the death of a man who contracted the disease while treating his horse. At present I do not know of a case.

"Cerebro-spinal meningitis (so-called) is so prevalent throughout the State that hundreds of horses die yearly. We have been striving to discover the cause, but as yet are unsuccessful. We have outbreaks during every month of the year. During the last ten years, judging from personal observation, the loss caused by the above-mentioned disease has amounted to hundreds of thousands of dollars.

"Tetanus prevails, but the number of cases yearly has been greatly reduced by veterinarians.

"Tuberculosis is alarming in the northern part of the State, especially within twenty miles of Wilmington. A large number of cows have been tested with tuberculin, and we have found in a few herds as high as 75 per cent diseased.

"We have had several outbreaks of anthrax during the past four years, and at present the disease exists on the salt meadows bordering Delaware Bay, about twenty-five to thirty miles south of Wilmington. Some farms on which the disease exists have lost their entire herd. Vaccination within the last two years has been practiced with success. It is impossible to pasture cattle in some districts without taking this precaution. No deaths have been reported on infected pastures when the animals have been previously treated. A fresh outbreak of anthrax on an upland meadow was reported a few weeks ago. No such disease had been known on the farm within the present century. Through the pasture runs a stream carrying the refuse from a leather factory. Animals kept dying as long as the pasture was used. We have one pasture here in the city where cattle have been dying for four consecutive years.

"Rabies has been causing much trouble among dogs, cattle, and human beings; fifteen or twenty persons have been sent to the Pasteur Institute for treatment.

"The tuberculin and anthrax vaccine used is manufactured by the bacteriologist of our Experiment Station at Newark, Del. Both products are effective in their action. I have had a great deal of experience with the tuberculin, and find it equally as effective as the Koch product. We have been fortunate enough to hold post mortems, with but very few exceptions, on cases condemned, and have found the disease in every case where a reaction followed the injection.

"The State work of Delaware is under the supervision of the Director of the Experiment Station."

North Dakota.—Louis C. L' Moore, V. M. D., of Jamestown, contributes the following report: "Glanders in horses is our chief and most destructive malady. It is quite prevalent, and while at times it seems to diminish, it will again break out with new vigor and become as prominent as ever.

"Tuberculosis in dairy herds does not exist to my knowledge. "Black-leg exists this year in the bottom lands of the Missouri River to the extent of 1 per cent.

"In the year 1893 there were 103 head of horses destroyed for glanders; in 1894, 113 head. This year there will be an increase of at least 10 per cent over the previous two years. This disease will doubtless be as prevalent for years to come as it is now, or as long as the Government continues to buy horses of 'Tom, Dick and Harry,' to supply the Indian Reservations of the State."

Dr. Hinebaugh, of Fargo, kindly contributes the following brief note:

"I have been experimenting during the past two years with turpentine as a means of healing deep sores and fistulae of the withers and poll. I have not failed to cure a single case rapidly where the bones were free from disease. I clean the cavity with a dilute solution of carbolic acid, being careful to wash out all the pus and necrosed tissues. I then cover the edge of the wound with tallow, lard, or linseed oil, and inject turpentine into the cavity until it is nearly full. Repeat this operation after about three days, and usually about three or four applications are sufficient to cure the most aggravated forms, where no diseased bone is present. Four applications are the most that I have ever made. I do not use the knife in these cases. Thus far it has proved an entire success, surpassing my expectations."

Dr. W. F. Crewe, of Devil's Lake, contributes the following: "I have acted as District Veterinarian for the past two years, my district comprising nine counties, and have destroyed sixty-three head of horses for glanders. The loss in the district from anthrax has been about thirty-five head during the two years."

South Dakota.—Report from Dr. C. W. Palmer, Lennox, S. D.: "The principal disease to contend with in this State is glanders, of which 102 cases in 1893, and 43 cases in 1894 came under my observation. My attention has been called to only one herd of bovines that were afflicted with tuberculosis—a herd of high bred short-horn cattle. The disease came to this herd from Iowa, and is still confined to this herd. Our native cattle are free from disease except 'lumpy-jaw,' and a few cases of black-leg in the spring and fall of the year."

Iowa.—In reply to a special request, Dr. G. A. Johnson, of Sioux City, writes the following concerning the "Corn-stalk Disease," and the so-called "Bottom Disease:" "In regard to Corn-stalk Disease, in the *American Veterinary Review*, vol. xiv, p. 697, there is an article which was presented by myself before the Iowa State Veterinary Medical Association. In that article I presented my views at that time, which later investigation has only served to strengthen. I have since seen another outbreak similar to the history given by me in the discussion that followed the reading of my paper; also one outbreak among steers that were in pens being fattened for market. They were being fed on snapped or jerked corn, that is, ears with the husks on. Some three out of about twenty died. Those that died presented symptoms similar to those of other outbreaks. Not having held post-mortem examinations, I could not say what the pathological lesions of these cases were, further than that the owner stated that the contents of the omasum were fluid in each case, and that no other lesions attracted his attention, except some congestion or engorgement of the lungs. He could not tell whether this was an ante- or a post-mortem change.

"In regard to the so-called 'Bottom Disease,' I will say that my personal experience is very limited, but that I have made much inquiry about the disease, and am led to believe that it is a cirrhosis of the liver, closely resembling malarial cirrhosis in man. I am very positive that there is no connection between the disease and the so-called 'Rattle-weed' (*Crotolaria*

Sagittallis), for both cases that I have seen received hay that was free from this weed, while, on the other hand, I have seen horses eating hay where nearly one-half was rattle-weed, and none developed any symptoms of 'Bottom Disease.' This of itself would not signify much, were it not corroborated by many who have had much experience with the disease. The *Iowa State Medical Reporter* (September, 1894), contains an article by Dr. D. S. Fairchild, which I consider to be the best yet published on the pathology of this disease. It is evident from the history of the cases given by him that all were acute cases, but many of the horses that die with this disease are affected for from four to six months. The investigation was conducted principally to prove the crotolaria theory, by some student, and is wholly unreliable."

Dr. W. B. Niles, of Ames, writes: "In May and June I studied an outbreak of swine disease which proved to be the swine plague. The Government remedy apparently did no good. The most serious disease in this State at present is tuberculosis. This is much more prevalent than has been heretofore supposed. The tuberculin test has revealed it in many herds that had been supposed free from it. Dairy herds are most involved, but many breeding herds are affected."

Dr. F. H. P. Edwards, of Sioux City, writes: "Ectozoa and entozoa have been very plentiful in all domestic animals, especially in dogs and horses, *Ascaris megaloccephala* and *strongylus tetracanthus* being the most prevalent, the latter in horses causing several deaths, with the usual symptoms. Influenza is quite common in a mild form. Actinomycosis, tuberculosis and hog cholera, have also come under my observation during the last year."

Illinois.—During the past year we destroyed 143 horses and mules affected with glanders, or farcy. Of this number, thirty-two were discovered in three street car barns in Chicago. In May we inspected all the street-car horses in Chicago. We inspected 5375, and found the disease in three barns. Nine hundred and fifty are now under quarantine restrictions. About two weeks ago we discovered the disease in two stables, in one of which there were seven out of ten affected.

The average pay per head for diseased horses during the past year has been about twenty dollars. Outside of Chicago I think the disease is on the decrease. I believe that allowing

the owner some compensation for diseased animals, aids us very much in obtaining reports of suspected cases, and incidentally, in discovering exposed animals, which we are thus enabled to quarantine. In the large cities it is often very difficult to obtain any information concerning the diseased animals, while in the country districts we seldom meet any difficulty in obtaining all the information that is necessary for the proper protection of the community.

Cerebro-spinal Meningitis.—During the past year I have found this disease in two stables. In one, six out of seven died, and in the other four died. The stable was in bad condition, so I destroyed the two horses that were still living in the barn, set fire to it and burnt the barn and the horses.

Spasm of the Larynx.—This occurred on one farm last year, the owner losing five horses in about six hours. Cause obscure. All surroundings appeared in excellent hygienic condition.

Texas Fever.—Four cattle died last fall with Texas fever, having been infected by some Southern cattle. A cattle-car caught fire, and the cattle escaped, roaming over pastures and corn-fields. The neighbors immediately drove them into a yard where they were held over night. On the following day they were loaded and shipped to market. About three weeks later the owner of the farm on which these cattle were held over night, lost two cows within forty-eight hours after the first evidence of sickness. Subsequently two more died. Last month an outbreak occurred in Brown County among cattle that were shipped by boat from East St. Louis, unloaded in Brown County and distributed on three different farms. Sixteen of this number died. Four native cows that crossed the trail of these cattle died about three weeks later. Forty-one head of the eighty-five that were shipped from St. Louis were sent to the Chicago market; none in that bunch had yet shown any signs of disease, but the owner became alarmed when he heard that some of the other cattle died, and he thought it would be safer for him to market them. Arrived in Chicago, they were placed in the Texas division and I was immediately notified. Next day we took them to the slaughter-house and killed them under my inspection. I found seven of them with lesions of the disease, five of which were so bad that I condemned them as unfit for human food. Two others I condemned for being very badly affected with *Distoma hepatica*.

Anthrax.—There were only two cases of death by this disease reported during this season.

Intestinal Worms.—Disease caused by the *Strongylus tetracanthus* and the *Strongylus armatus* seems to be increasing in this State year by year. Last fall and winter there were probably two hundred deaths reported to me as caused by these parasites.

Rabies.—I have had two reports of outbreaks of rabies among horses, cattle and dogs. I believe that one of these reports was true. An extract from a letter written to me by Dr. A. H. Baker, of Chicago, is as follows: "A very prevalent disease of dogs is what we call diphtheria, but it is a question in my mind whether it is properly named, for there is an absence of any diphtheritic membrane. The dog is attacked with high fever, rapid pulse, and loss of appetite. On the second day the lower jaw begins to drop, and increases from day to day. The visible mucous membranes, especially of the mouth, are at first injected and become livid on the third day, with inability to swallow. The dogs rapidly grow worse and die from collapse at the end of the fourth or beginning of the fifth day. There is no delirium, no inclination to bite or gnaw; inoculation fails to communicate it to other dogs, yet it runs a perfectly definite course and ends fatally in every case. Dr. Lagorio says it is rabies, but I cannot see a single symptom of that disease in it."

Corn-stalk Disease.—My personal attention was called to but one outbreak of this disease last winter. Ten cattle died in a herd of one hundred and twenty-three within ten days after they had been turned into a fresh, stalk pasture. The owner then removed them, and no more losses occurred. Last fall, during the dry season, a report reached me from Franklin County that some contagious disease existed at Fitt's Hill. One man had lost three out of four horses, in about three weeks' time. They fell off in flesh, were very much debilitated, and limbs became edematous. When down they were unable to arise, and died without much if any pain. They were pastured on high ground in an orchard, but the grass was very short. They obtained some green corn-fodder, and went to a well at the bottom of the hill, into which a small stream of water drained, coming direct through a hog lot where about twenty hogs were wallowing in this stream. I drew up some of the water from this well, and the stench was so strong that

I did not think it possible that a horse would drink it. While I was there a neighbor led two of his horses up to the trough, drew some of the water, and the horses drank of it with avidity. I warned him of the danger, and he seemed to appreciate it, and said he would not water there again. I attributed the death of these three horses directly to this polluted water.

Actinomycosis.—This disease during the past year has not been more prevalent than in former years, nor do I think that it is diminishing. I have received numerous reports of isolated cases throughout the State. Occasionally some farmer or feeder will report three or four, or even more, cases in his herd. One prominent feeder of Cass County recently told me that during the month of May about twenty cases appeared in his herd, but they were all local affections—loose tumors about the jaw or neck. He shipped seven of the worst cases with two carloads of cattle to Chicago, and the inspector held four for post-mortem examination. Three of these I passed, and condemned the remaining one. I found one having actinomycotic tumors in the liver. On the twenty-third day of July, 1894, the State Board of Live Stock Commissioners, in connection with the Live Stock Exchange, Union Stock Yards, Chicago, adopted rules and regulations for the examination of all cattle that come into these yards under any suspicion of this disease. The State put an assistant State Veterinarian there, whose duty it is each day to examine at once all cattle that are reported to him by the various commission firms. He has four men to assist him in tagging, driving, quarantining, and keeping the records. From the twenty-third of July, 1894, until the first day of September, this year, he examined under this rule 9295 head of cattle. Of this number he passed 6578. Cattle that he passes have a passed tag put in their ear as evidence to any purchaser that the animal is fit for any market purpose, hence the owner obtains full value, while before this rule went into effect these cattle were purchased by professional lump-jaw dealers at less than one-half their actual value. Two thousand seven hundred and seventeen were held for post-mortem examination. All of these I inspected at the time of slaughter, and condemned out of this number 2004, leaving a balance of 713. Out of the number that I condemned in the slaughter house, 127 were condemned as being tuberculous; 50 for excessive emaciation; 18 for cancer; 9

for pregnancy; 9 for gangrenous abscesses; and 13 for excessive bruising. The agent at the East St. Louis yards during this same period condemned and killed 43 head. This system has proved eminently satisfactory to the shippers, commission men, and the State health authorities, and I believe that the State Board of Live Stock Commissioners of Illinois have reason to congratulate themselves on the efficient work that they have inaugurated.

CONTAGIOUS DISEASES IN PENNSYLVANIA, WITH
REMARKS ON RECENT OBSERVATIONS
UPON CONTAGIOUS DISEASE.¹

BY SIMON J. J. HARGER, V. M. D.

As a member of the Committee on Diseases, I herewith submit to this association a general report on some of the contagious diseases in my native State, Pennsylvania, and a résumé of some experimental observations upon a number of these diseases.

CONTAGIOUS DISEASES IN PENNSYLVANIA.²

Glanders.—The following report was communicated to me by State Veterinarian Bridge:

There were 41 outbreaks; 64 animals were affected; 43 cases were acute and sub-acute, 16 chronic; 10 had both farcy and glanders; 3 had pulmonary glanders only. These cases were detected by injections of mallein.

Fifty-one had ulceration of the nasal mucous membrane, enlarged sub-maxillary glands, etc. In glanders the lesions were mostly in the nostrils. In farcy, the ulcers were mostly found on the inside of the thighs, above the pasterns, on the hind legs and the abdomen.

Forty-six animals were buried, 12 sent to the fertilizing works, 6 were burned. Four of the 46 have been in quaran-

¹ Read before the U. S. V. M. A., at Des Moines, Iowa, Sept., 1895.

² I am indebted to Drs. Eshelmen, McLean, McAnulty, Ridge, Meredith, Leber, H. B. Raynor, Kinten, Minster, J. B. Raynor, Benner, E. M. Michener, Isaiah Michener, Noack, Croner, Oyler, Bridge, Faughnan, Mattson, Hoskins, Zuill, Robinson, Seitzinger and T. B. Raynor.

tine and have died or been destroyed by their owners (without recompense) and buried, the State having no funds since May for paying for the destruction of animals affected with contagious diseases. Fifty-nine animals were destroyed.

Twenty-eight animals, known to have been in contact with diseased animals, were supposed to have contracted the disease from the latter. Of the remaining 36, source of infection not known. Fifty-one animals have been paid for by the State, averaging \$16 per head.

One case assumed the latent form, the horse having a nasal discharge for two years, and being a source of infection to two others.

In one outbreak the prodromic symptoms were excessive pain and stiffness of the muscles of the neck, suddenly followed by farcy-buds or a nasal charge; in another, extreme shoulder lameness occurring over night was followed in ten days with symptoms of farcy. The longest period between two successive cases in the same stable was one year. (I. Michener.)

Influenza.—This disease has been prevalent nearly everywhere. It was characterized by typhoid pleuro-pneumonic and intestinal complications of unusual severity.

Cerebro-spinal Meningitis. Has been reported in two localities.

Anthrax.—There were three outbreaks. Forty-five cattle died out of 220 on the same pastures. In certain districts it recurs periodically, the causes assigned being stagnant drinking water, swampy pastures, and the drainage from infected centres, as tanneries and diseased carcasses. Two colts died in twelve hours after the onset of the disease. In the enteric form, death followed in a few days and rarely two weeks.

Rabies.—There were two outbreaks, affecting a few cows and dogs. One woman bitten by a dog died. In two cows the symptoms were "a wild appearance, saliva passing from the mouth and chewing at the rack; another, in an orchard, was wild in appearance, would go up to a limb, bite at it, paw the earth and run toward the fence where I was standing." (Oyler.)

Distemper in the dog was noticed in a few country districts, and exists always in large cities.

Glanders in the ox has until recently been denied, and this animal is considered refractory to the disease. During the last

few years two cases have been noted, and according to the remark of Nocard, the Guadelope and Maurice Island cattle are quite extensively affected with glanders.

Mallein.—In a previous paper I called attention to *typical* and *atypical* reactions. The latter, characterized by an abrupt rise of temperature, a short period of stadium and a sudden descent, is sometimes seen in pulmonary emphysema, strangles and collection of the nasal sinuses. Mallein has been extensively used, and has fulfilled all anticipations. I rely upon its revealing the presence of glanders, even when the clinical signs are not evident or are absent. In diagnosis mallein is superior to microscopic examination, inoculations or cultures. Semmer experimented upon 952 horses; out of 157 reacting, but two were healthy. Autopsies of those not reacting showed no disease.

Curability of Glanders.—Does mallein ever effect a cure of glanders?

The reaction from reinoculation of a glandered horse a certain time after the first injection may not manifest itself. Has the mallein, in such a case, effected a cure in the animal? Semmer and Itzkovitsch have noted several cases of spontaneous recoveries. Levi obtained it with tracheal injections. Peimon relates 16 cases of undoubted recovery. Helman, Babes, Pilavios, Bonome, Vivaldi, John and Schindelka have had similar experiences reported in various veterinary journals.¹ This leads us into a promising field, where further experimentation is necessary. May it not also explain that, while the horse is very susceptible to the disease, only a comparatively small number in a community, or in large stables, may be affected? Or can it be that the disease in these cases assumes a so-called "latent" form, liable to exacerbations, the bacilli remaining in an inactive state in the tissues and cicatrices?

Semmer¹ distinguished the glanders of central Europe from that found in equatorial districts, and claims that the latter is curable. Brusasco and others, in Turin, have cured 50 per cent of the glandered horses by means of phenic acid, iodine, corrosive sublimate, sulphate of iron, tar, cantharides, fumigations of tar and turpentine and the actual cautery. Levi and Neiman have been successful with intra-tracheal injections of iodide of potassium. In Algeria, Decroix and Bonzom have cured numerous cases of farcy by cauterization and extirpation

¹ *Recueil de Med. Vet.*, Dec. 15, 1894.

of the tumor. In France subcutaneous injections of oil of creosote have been successfully employed. Semmer and Itzkovitsch have seen a spontaneous recovery in a colt affected with glanders and farcy in consequence of inoculation. In man chronic cases of glanders have been cured by iodine preparations and mercurial ointment. Babes attributes curative properties to the serum of the ox's blood, this animal being almost refractory to the disease. Pilavois has cured eight horses during the first stage of the disease by weekly injections of mallein. Helman (*Rec. Vet.*, June, 1894) has produced immunity in dogs and guinea pigs by injections of the serum of "cured" horses. The bacilli lose their virulency in the blood-serum obtained from these horses, a property also enjoyed, but in a greater degree, by the blood-serum of the bovidae. The horse should be considered "cured" when he ceases to react to injections of mallein.

Nocard,¹ who has studied the subject carefully, asserts that horses which, though reacting or not the first time, but not on two successive injections, can be considered cured and released from quarantine.

Transmission of Glanders through the Digestive Mucous Membrane.—Varies according to the species. Cadéac and Malet² made some experiments as to the transmission of the disease from the ingestion of glanderous material. They injected liquid solutions of the glanderous material into the stomach and intestines of the ass and the guinea pig by means of a syringe with a double canula, in order not to infect the wounds. In no instance was the disease conveyed excepting when the abdominal wound was accidentally infected. Nocard has produced glanders by infection through the alimentary canal in two donkeys and two horses; in one by placing pure bacilli in the centre of a carrot, and in the other three by smearing them between two pieces of bread. In three there was no ulceration of the mouth or pharynx.

The transmission of glanders through the digestive tract of the horse is generally not successful, the mucous membrane being impervious to the bacillus. Renault has proved by his experiments that the virulent material of acute glanders and

¹ *Rec. de Med. Vet.*, 1895.

² *Jour. de Med. Vet. et de Zootech.*, Sept. 1894.

farcy completely loses its contagious properties in the digestive tract of the dog, pig and chicken, but preserves them (although with less virulency) in that of the horse; the bacillus passes out with the feces. In the horse, on the contrary, it may meet conditions favorable to its absorption, but in all cases it resists the prolonged action of the gastro-intestinal juices. Cadéac and Malet have found that the contents of the stomach and intestines of the guinea pig, nine hours after the ingestion of glanderous material, is innocuous when inoculated into dogs, although not all the bacilli may be destroyed when mixed with a large quantity of food. However, in artificial digestion, the virulence of the tubercles, nasal discharge and nasal septum has resisted the action of the digestive secretion of the dog as long as forty hours. The same takes place with artificial gastric juice. They, therefore, conclude that the bacillus of glanders preserves its specific action in the digestive tract of all animals, but the mucous membrane prevents its absorption. From the various facts collected it follows that glanders in the horse, as well as in the other domestic animals, is not transmissible by feeding the diseased tissues, the discharge or the pus, unless there be an abrasion of the mucous membrane from dental spiculae, coarse food, calculi, etc.

Anthrax.—Preventive inoculation in anthrax has been practiced since 1880. In general, statistics show it to have been efficient. Since its employment in France, the annual mortality has been reduced from 10 to .69 per cent in sheep and from 5 to .18 per cent in cattle. The same results were obtained in other European countries; in Great Britain the results were not as good. During the last twelve years in France, 1,788,677 sheep and 200,962 cattle were inoculated, with a mortality of .94 per cent for the former and .34 per cent for the latter. In herds that are already infected the mortality is greater. A commercial anthrax virus is on the market; the dose is $\frac{1}{4}$ c.c. for the larger animals and $\frac{1}{8}$ c.c. for the smaller.

Examination of the blood of animals affected with anthrax is not always accurate, because the bacilli, from the manner in which the blood is collected, are mixed with other micro-organisms which mask or resemble these bacilli. Their essential peculiarities are a segmented appearance and a mucous or gelatinous envelope, the latter being the specific point. The blood is spread upon a glass slide in a very thin layer, rapidly

dried and then stained with a 1 per cent solution of fuchsin. The discoloration is obtained by immersing the slide in a 50 to 70 per cent solution of alcohol for a few minutes. The preparation is then washed in distilled water and examined in glycerin and water. The veterinarian frequently finds it necessary to examine the blood in outbreaks of anthrax and the above method is very simple.

To recapitulate, the following characteristics of the bacillus enable one to make a positive diagnosis:

1. The bacterium is rod-like 5 to 20 μ long and segmented, 1 to 15 μ wide.
2. The extremities of each segment are slightly enlarged and resemble those of a bamboo cane.
3. The segments are separated by clear spaces having the form of a parenthesis (), the segments thus being hollow at each end.

4. A capsule, with well-defined borders, surrounds the whole contour of the bacillus. These characters are visible only with from 600 to 900 diameters, and more so without the diaphragm.

The capsule is not seen upon the bacterium in cultures during life nor upon other microbes found in the blood of the cadaver. The presence of this capsule is a valuable diagnostic feature. (*Rec. de Med. Vet.*)

According to Mattei,¹ the virulence of the meat of animals succumbing to symptomatic anthrax is retained for a long time. Small particles of meat dessicated for ten years and introduced under the skin of the guinea-pig have caused the death of this animal with all the symptoms of anthrax. The bacillus was found by microscopical examination and in cultures. The spores resist the dessiccation.

Contagious Pleuro-Pneumonia.—Since 1851 the microbic origin of this disease was suspected until 1889, when Arloing isolated the *pneumo-bacillus liquefaciens bovis*, so called by him because it liquefies gelatin. This bacillus is found in the serum of the lungs and cultures can be developed upon gelatin, and still better on boiled potatoes. Injections of the cultures of this bacillus into the lungs has enabled Arloing to reproduce the typical form of the disease, especially when the culture has been developed from the serum resulting from a previous subcutaneous injection of the natural serum as practiced in the

¹ *Jour. de Med. Vet. et de Zootech.*, April, 1895,

inoculations of Dr. Williams. This seems to increase the virulence of the microbe, which can now reproduce in the highest degree the lesions characteristic of a natural contagion. The bacillus is generally short and rather thick ; it is found in the natural serum, isolated in pairs, and stains with gentian violet.

Preventive inoculation, although practiced for more than forty years, has not found practical favor, the mortality being about 1.5 per cent, and necrosis of the tail in 6 to 8 per cent. The pneumo-bacillus when taken from the lungs, is somewhat attenuated and can be inoculated subcutaneously without any danger. The effects are slight febrile disturbances, temporary diminution of the secretion of milk and a circumscribed, transient swelling at the seat of inoculation. In this respect, the advantages of the pneumo-bacillus are much superior to those of the natural serum, which is not homogeneous in its virulence and is very irregular in its action.

1 to 1.5 c.c. of the liquid culture is placed under the skin with a hypodermic syringe ; the immunity seems to be equally strong. The following table shows the results of inoculation with the natural serum and with the bacilli culture :

NATURAL SERUM.

Number inoculated	229
Accidents, grave	8
" fatal	1
Animals destroyed	62
Death and non-success, 27.5 per cent.	

BACILLI CULTURE.

Number inoculated	122
Accidents, grave	—
" fatal	—
Animals destroyed	28
Non-success, 22.9 per cent.	

The following table shows the results of the inoculations of healthy stock brought upon premises where pleuro-pneumonia had existed immediately before :

NATURAL SERUM.

Number inoculated	2054
Accidents, grave	44
" fatal	10
Number died	103
Loss and non-success, 5.01 per cent.	

BACILLI CULTURE.

Number inoculated	1344
Accidents, grave	—
“ fatal	—
Number died	9
Non-success, 6 per cent.	

In order to prevent the complications attending Williams' method, as was Arloing's desire, Lequerrière has employed the natural serum obtained from the diseased lung, diluted according to Nocard's formula¹: 1 part serum, 1 part phenicated water (5-1000) and 2 parts glycerin. The glycerin not only mixes the serum uniformly in virulence, but the phenicated solution seems to preserve it. The solution can also be preserved for some days in a cold chamber. From one-half to two drops of the pure serum is sufficient for one inoculation. A larger dose gives grave symptoms. In this manner hypo- as well as intra-dermic inoculations have not given rise to complications and were as effective, it is said, as the inoculation of pure bacilli cultures.

Cancer.—Some authors have considered cancer contagious and others parasitic.

Gratia and Linéaux², with this latter view, have made graftings and inoculations. Fragments of cancerous tissue were inserted under the skin, the peritoneum and into the wall of the stomach; inoculations under the skin into the serous cavities, the mammary gland, the lymphatic and salivary glands, the testicles and the veins.

The results in endeavoring to transmit it from dog to dog or from man to dog were constantly negative.

1. Cancer does not appear inoculable, even in animals of the same species.

2. A parasitic nature is not demonstrated.

3. Direct or indirect contagion of cancer is not proved; at most, one can only admit the possibility of the transplantation of cancer, and principally in subjects possessing a special pre-disposition.

4. The etiology and pathogenesis of cancer are still undetermined.

¹ *Rec. de Méd. Vet.*, March, 1894.
Rec. de Méd. Vet., April, 1895.

Based upon the idea of an infectious nature of malignant tumors, *serum therapy* has been applied to these morbid growths and almost simultaneously in France and Germany.

Richet and Héricourt have communicated their results to the Academy of Sciences of Paris. Their method was as follows :

An *osteosarcoma* removed from the leg of a patient was crushed with a little water ; the liquid obtained was filtered through a cloth and injected into an ass and two dogs. In five, seven and fifteen days these animals were bled and the serum collected. This serum was employed in two cases : One a recurring fibro-sarcoma, the other diagnosed cancer of the stomach. Three c.c. were injected daily in the region of the tumor.

In two cases the results were most happy ; the first tumor was "cured" in forty days ; the second disappeared in three weeks and the general health improved.

Emmerich and Scholl, in Germany, used the following procedure : The serum of a sheep inoculated with virulent cultures of the erysipelas bacillus was collected and filtered with a Chamberland filter to remove all bacilli and sterilize it. The liquid was preserved in sterilized tubes.

From 1 to 25 c.c. of this fluid were daily injected into the thickness of the neoplasm, according to its volume.

Emmerich and Scholl have seen a rapid diminution and at times even a disappearance of the cancerous tumors already recurrent and complicating the neighboring lymphatics which also rapidly ameliorated. The results have been negative only in two instances, and are more positive as the disease is more recent.

The erysipelas bacillus was suggested because an intercurrent attack of erysipelas ameliorates a cancerous growth.

Foot and Mouth Disease.—As to the microbe of apthous fever, it is asserted that it does not belong to the order of bacteria, but is related to the rhizopoda and is analogous to the parasite of malaria. This organism can be stained with an aqueous solution of methyl blue and thymol. The disease is transmissible to man through unboiled milk, which is, according to Bollinger, infectious, even after mixing with nine volumes of normal milk or taking it in coffee. Infection is also effected through butter, cheese, milking and caring for diseased cows, and through intermediary objects.

The prognosis in man is favorable, the treatment is symptomatic and dietetic.

Swine Plague.—Lorenz¹ has found in a form of urticaria of the pig, a bacillus which has a similarity to the micro-organism of swine plague and that of septicemia of the pig. One of these microbes can create immunity against the other. The blood of the animals possessing immunity against swine plague contains a prophylactic agent which the author has precipitated with sulphate of ammonia. This agent can give immunity under certain circumstances.

Here are some of the conclusions: "After each inoculation of a rabbit possessing immunity against swine plague, urticaria or septicemia of the pig, the blood of this animal contains a prophylactic substance.

"A subcutaneous injection of this substance gives the rabbit immunity against any one of these three diseases.

"This substance extracted from the blood of the rabbit seems to confer immunity to the pig."

Canine Distemper.—Dr. Bruno Galli-Valerio,² of the Pathological Institute of the Veterinary School of Milan, by staining with Gram's method and with anilin, the diseased lung of a dog affected with distemper, discovered an ovoid bacillus, isolated or placed side by side, 1.25μ to 2.5μ long and $.31\mu$ wide. The brain, spinal cord and the exudate of the meninges also showed the same grouped ovoid bacilli from which characteristic cultures could be obtained in gelatin at $18-20^{\circ}$ C., and the other organs do not contain this microbe and these cultures remain sterile.

In the tissues of dogs injected with such cultures, these bacilli could be found and new cultures developed. However, in old dogs, from five to eight years, there were no characteristic symptoms; but in young dogs, he claims to have reproduced the characteristic symptoms, including those that are cerebro-spinal. Of 1378 dogs affected with distemper in Vienna, two-thirds were less than one year old, one-fifth one to three years, one-seventh above three years. The author also suggested the analogy between distemper in the dog and measles in man.

Conclusions.—1. In the young dog there is always found in the lungs and the central nervous system, a bacillus whose

¹ *Annales de Med. Vet.*, June 1, 1895.

² *Thierärztliche Mittheilungen.*

dimensions vary from 1.25μ to 2.5μ in length and $.31\mu$ in width.

2. This microbe gives characteristic cultures in gelatin at $18-20^{\circ}\text{C}$.

3. Inoculations of these cultures into the veins, under the skin, and into the lungs of aged dogs do not produce the symptoms of distemper.

4. The inoculation of the culture, from the brain, under the skin of a young dog five to six months old, has reproduced distemper with the characteristic pulmonary and cerebro-spinal symptoms.

Tetanus.—A practical point to be considered is its transmission from one animal to another. Recent experience seems to have demonstrated this fact beyond a doubt. A stable in which a subject of tetanus stands, whether he die or recover, is always a source of infection, especially to those with wounds of the integument or the foot. This may be the case whether the first subject is docked, castrated, or suffering from a foot wound. Such stalls should therefore be thoroughly disinfected, or better not occupied by another horse for some time afterward.

I know of one instance in which four horses were affected with tetanus in the same stall during the course of a year. Cagny has made a series of pertinent observations upon the point. In one case a castrated colt was infected one year after the first tetanic subject had died.

This observer has used with good results, as a preventive, in such diseases as render horses susceptible to tetanus, equal parts of essence of turpentine and oil in successive doses. He claims to have cured three-fourths of his cases of tetanus with this treatment. He also considers edema of the legs and sheath a favorable symptom of recovery.

The transmissibility of tetanus through the digestive tract by means of the food is not definitely determined. Leyssandier suggests it from the fact that a few cases of colic have been immediately followed by tetanus, and reports three cases. In 1859 Betoli related that slaves became infected by eating the meat of the carcass of a bull which had died from tetanus in consequence of castration. Guelpa, Chicoli, Marvan and Verneuil have established from clinical observations that the consumption of the meat of tetanic animals is not without danger. The last observer has collected numerous instances tending to

demonstrate the virulence of the flesh and the cadaveric debris of animals destroyed by the disease. The bacillus is found in various kinds of fodder and Nicolaier has found it in the blood of tetanic subjects.¹

As to hereditary transmission of immunity against tetanus in the young, Ehrlich has deduced the following conclusions: (1) The protoplasm of the spermatic filament and of the ovum does not transmit immunity; (2) the immunity possessed by the young of immunized mothers is due to the passage into the circulation of the fetus of the antitoxins of the maternal blood; (3) the milk is the true vehicle of the immunizing substances and gives an immunity purely passive and proportional to the period of suckling. It continues for two or at most three months. (*Veterinary Magazine.*)

Treatment.—Let me refer to the use of *peroxide of hydrogen*. This is an oxidizing agent and was suggested by the fact that the tetanus bacillus is anaerobic, and its pathogenic activity is arrested by the presence of free oxygen. Aureggio was the first one to employ it for this purpose and treated two cases successfully by injecting it hypodermically. Only fresh preparations should be used and the injections may be made on the side of the neck, the breast and the inferior abdominal region. One hundred grams (three ounces) are administered daily and progressively increased to 200 grams. Abscesses may develop at the points of injections, and scrupulous anti-septic precautions must be observed.

In addition to the peroxide, clysters of chloral, woolen blankets to induce perspiration and good hygienic conditions must be observed. Several other veterinarians have reported cases of tetanus treated successfully in this manner. It is worthy of a trial and its general efficiency remains to be proved in the future.

Peroxide of hydrogen counteracting the activity of the bacillus of Nicolaier may be a preventive in treating wounds, especially those of the foot before the infection has commenced.

The antitoxin treatment of tetanus is still an unknown quantity. The toxin of this disease is very powerful, two drops having destroyed a healthy horse. For the purpose of immunization, the pure toxin heated to 65°C., or mixed with iodine is injected subcutaneously in repeated and gradually

¹ *Rec.*, July, 1894.

increasing doses at intervals; the animal thus becomes so "accustomed" to the poison that 250 to 300 c.c. can be given at one injection, enough to destroy 2500 horses (Nocard).¹ This serum is preventive and curative. Injected under the skin of a tetanic subject, it is efficacious only in proportion as the time elapsed since the infection has been short. It is most useful as a preventive only at the time or shortly after the virus is introduced into the circulation; but the symptoms of tetanus are, as a rule, not recognized until the system is saturated with the poison and treatment is then of little avail.

In the horse the value of the antitoxin treatment remains to be determined, and its application, both as a prophylactic and curative means, should be encouraged.

*Rabies. Anti-rabic inoculations.*²—At the Pasteur Institute, in 1893, 1648 persons were treated by vaccination; six died from rabies; in two, the first symptoms were noticed only fifteen days after the last inoculation. Three were taken with rabies during the treatment and the sixth voluntarily abandoned it. The following table shows the number treated and the mortality since 1886:

Year.	Number Treated.	Deaths.	Mortality.
1886	2,671	25	.94
1887	1,770	14	.79
1888	1,622	9	.55
1889	1,830	7	.38
1890	1,540	5	.32
1891	1,559	4	.25
1892	1,790	4	.22
1893	1,648	4	.24
1894	1,387	7	.50
	<hr/> 15,817	<hr/> 79	<hr/> .50

The persons treated were divided into three classes:

(a) Rabies proved by the disease occurring in animals bitten, or by inoculation of the medulla.

(b) Rabies from veterinary diagnosis.

(c) Animals suspected of rabies.

The bites were divided into those of the head, hands and members.

¹ *Rec. Vét.*, June, 1895.

² *Annales of the Pasteur Institute.*

	HEAD.			HANDS.			MEMBERS.			TOTAL.		
	Treated.	Died.	Mortality.	Treated.	Died.	Mortality.	Treated.	Died.	Mortality.	Treated.	Died.	Mortality.
Class (a)	12	—	—	80	—	—	40	—	—	132	0	0
Class (b)	89	—	—	534	3	.56	385	—	—	1008	3	.30
Class (c)	34	—	—	243	1	.41	231	—	—	508	1	.20
Total .	135	—	—	857	4	—	656	—	—	1648	4	.24

It will be noticed that no deaths occurred among those cases in which rabies was known to exist. Among the whole number the mortality was at a minimum, while, without treatment, the fatality is 20 per cent.

TRANSLATION.

OBSERVATIONS OF EIGHT HUNDRED CASES OF COLIC IN THE HORSE.

BY DR. KLEMM.
[TRANSLATED BY JOHN W. ADAMS.]

From October 1, 1888, till May 5, 1895, I treated 800 cases of colic. Of these I diagnosed :

	Times.	Per cent
Stomach colic	19 =	2.375
Colic of small intestine	111 =	13.875
Colic of cecum	44 =	5.5
Colic of cecum and colon	22 =	2.75
Impaction of colon	329 =	41.125
Displacement of colon	100 =	12.5
Colic of colon and large intestine	26 =	3.25
Colic due to large fecal balls	110 =	13.75
Flatulent colic	39 =	4.875
Of these patients there died	57 =	7.125
Were destroyed	6 =	.75
Total lost	63 =	7.875

Since October 1, 1888, I have been able to diagnose stomach colic 19 times with certainty. Among the symptoms the most characteristic was great restlessness, during which the animal pawed and moved slowly about, seeking a place in the straw in which to lay down. The animal usually lays down with great care, grunting loudly meanwhile, but soon rises to its feet. Restlessness is frequently broken by short intervals of ease. Such behavior I have never seen so well marked in any other form of colic. In stomach colic an animal never becomes very violent except shortly before death. Dyspnea is never absent in this form of colic; but since this symptom is well marked in many other inflammatory affections of the abdominal organs (flatulent colic, enteritis, peritonitis), it cannot be regarded as pathognomonic. Among inconstant symptoms may be mentioned furred tongue, offensive breath, belching and vomiting; the presence of these symptoms, however,

strengthens the diagnosis. Sitting upon the haunches like a dog is not seen any more frequently in this form of colic than in others; this position may be assumed in any form of colic, why, I am unable to say.

Of these 19 patients 5 died (38 per cent), 4 from rupture of the stomach; the fifth had sand in the stomach and perished of peritonitis. The cause of stomach colic is almost always overeating, and as a rule it comes on during or soon after a meal devoured greedily by a hungry animal. That overfilling of the stomach is promoted by cessation of peristalsis in its walls cannot be established by post-mortem examination. In one case the colic appeared first two hours after excessive eating. This horse was hitched up immediately after its morning meal and driven twenty miles at a trot. When half way on the journey it became sick, and was brought to me with a ruptured stomach.

However, too hasty eating, resulting in overfilling of the stomach, cannot be the only cause of stomach colic, as the following cases seem to indicate :

A Percheron horse, behaving badly in harness, was reined up violently and whipped by the driver; he immediately became sick and died in two hours. On post-mortem examination I found a zigzag bloody rent in the larger curvature of the stomach; the latter contained very little food. This animal had acted drowsily during five hours following the last meal before it was maltreated.

A colt ran away, was sick when found a few hours later, and died almost immediately from rupture of the stomach ; post-mortem was made by another veterinarian.

In a third case a livery horse was ridden sharply by a drunken person till it fell to the ground, covered with foam, and died soon after. In this case, also, I found a zigzag bloody rent in the stomach, with ragged, swollen borders.

I saw a somewhat similar case in a circus horse, which, cruelly clubbed on account of some vicious trait, immediately afterward sickened and died in four hours. Here, also, I found a zigzag bloody tear; but in this case in the floating colon. In these three cases the absence of ulcers was proved with absolute certainty.

I noticed that those ruptures following violent maltreatment were very irregular in outline, while those due to overloading

of the stomach, or, as I may term them, passive ruptures, were quite regular and straight in outline. Whether this difference is constant or not will require observation of more cases; these few cases merely indicate that a rupture of the stomach may be brought about by excessive exertion and mistreatment. The peculiar irregularity of the rupture will be accounted for if we remember that the two muscular coats of the stomach contract at an angle to one another; excessive contraction, therefore, cannot easily cause a straight rent.

Stomach colic is most easily confounded with obstruction colic of the colon and large intestine when large balls of feces cannot be felt upon rectal examination. In such a case the diagnosis may be made, as a rule, by carefully questioning the attendant as to the time of feeding and the amount of work done; although in doubtful cases one may offer the patient a small piece of bread during an interval of ease. An animal suffering with stomach colic will manifest aversion, while one suffering from impaction of the intestines with feces will sometimes eat of the bread.

In the treatment of stomach colic I have nothing new to offer. I have upon several occasions been strongly convinced that rupture of the stomach is favored by administration of large quantities of liquid medicines. Cathartic pills of little bulk, given early, bring about a rapid cure. I have twice in doubtful cases given subcutaneous injections of one and one-half grains of sulphate of veratrin, but in both cases there followed immediately vomiting and other symptoms of rupture of the stomach. I resolved to make further experiments with smaller doses but, inasmuch as cathartic pills gave me satisfactory results, this resolution was not carried out.

Colic of the small intestine I have treated 111 times (13.875 per cent). This is the most frequent form of colic, especially in the army. In country practice the veterinarian seldom sees it, because it is more or less transitory. It is usually caused by gas in the small intestine giving rise to intense pain. The gas is produced by fermentation of food poor in quality; in army horses it is due, as a rule, to ingestion of filthy bedding, for as soon as this is prevented these colics disappear. As to the treatment of this form of colic I can offer nothing new; exercise, abdominal massage, fomentation, enemas of ether, tincture of opium with various

additions, enemas of tobacco smoke and similar remedies which have long been used, are worthy of trial.

Some horses have attacks of colic of the small intestine, in many cases frequently repeated, but always at irregular intervals and of varying intensity. It is this irregularity in the cases which prevents our confounding them with colic of the cecum. In such cases I first give a few doses of Glauber salt, followed by a large dose of tincture of opium. Of course the diet is very important: dry oats and hay, and some mucilaginous drink are recommended, while clover, shorts, green food, moistened food, etc., must under no circumstances be fed.

Of these 111 cases treated by me, 11 died; of which 10 were upon post-mortem found to have twists of the small intestine and 1 a torsion with intestinal rupture.

Colic of the cecum, of which I treated 44 cases (5.5 per cent), I was able to diagnose with certainty only after several days of close observation; for these cases of periodic colic of from three to four hours of continuous pain, followed by from six to eight hours of ease, are not often described by the attendant with sufficient accuracy to permit of an early diagnosis. As a rule, the veterinarian is not called in at the first or second attack; he usually sees the case first after several days and finds the animal either comfortable and eating or suffering from one of the intermittent attacks of colic. In short, these cases show nothing that is characteristic, and one must depend largely upon the history as related by the attendant. It is quite easy to mistake this form of colic for those frequently repeated attacks of colic to which horses affected with chronic intestinal catarrh are frequently liable. However, great irregularity in attacks of colic with excessive peristaltic sounds from the small intestines during periods of freedom from pain are strong indications of colic of the small intestine. A clear distinction between these two forms of colic is of the greatest importance, because the treatments of the two diseases differ in nearly every point. For colic of the cecum the treatment consists in the administration of cathartics and laxatives and frequently repeated exercise at a trot; nutritious drinks, green food, etc., hasten convalescence. Neither hay nor straw should be fed. Such treatment, however, would aggravate a case of colic of the small intestine.

Fortunately, in all of my 44 patients, I began the treatment before the end of the sixth attack of colic; for, as experience had taught me, after this time no methods of treatment at present known can save the animal. Three deaths (6.81 per cent) occurred: 1 with paralytic weakness, tumultuous heart and a peculiar offensive odor of the feces, leading me to suspect poisoning from ptomaines; in the second case I found on post-mortem an abscess in the wall of the engorged cecum; and in the third case death followed a fall upon frozen ground while the owner was trotting the animal to relieve its pain.

The usual causes of colic of the cecum are long-continued rest in the stable and the ingestion of large quantities of straw.

Of the 800 cases of colic 22 (2.75 per cent) were surely due to impaction of both cecum and colon. We can never be certain of this diagnosis until we find that an animal continues to have periodic attacks of colic after the colon, which was ascertained by rectal examination to be engorged, has been completely emptied by subcutaneous administration of eserine.

Exercise at a trot and in some cases a cathartic bolus favor a cure. The two deaths were due to paralytic weakness, accompanied by tumultuous heart and offensive fecal odor—probably formation of ptomaines.

Impaction of the colon, which occurred by far the most frequently in my practice (329 times—41.125 per cent), is the easiest form of colic to diagnose. In this affection the patient remains almost continuously and quietly in a recumbent position and continues to eat in moderate amount, or if standing he stretches out to his greatest length. Rectal examination affords a certain diagnosis, since the pelvic flexure of the colon may easily be felt widely distended by more or less hard fecal masses.

The eserine treatment, inaugurated by Dieckerhoff, has deprived this form of colic of much of its former danger. The marked decrease in number of deaths from this form of colic during the last ten years is attributable largely to the eserine treatment. Of the 329 cases treated by me 7 (2.12 per cent) died—1 from an enormous accumulation of sand in the colon, 4 from excessive bodily weakness, and 2 from rupture of the colon following inflammation.

I cannot get satisfactory results from eserine when given in doses of the size ordinarily employed. I am obliged to give a

medium-sized horse an average of from 3 to $4\frac{1}{2}$ grains at one injection in order to produce the desired action, and I frequently repeat this dose many times before a cure is made. Indeed, the number of eserín injections that will be required may be quite accurately predetermined by a careful rectal examination of the mass and consistence of the contents of the colon; and a feeling of confidence is always aroused in the owner if the veterinarian tells him with quiet positiveness, that his horse will be well in just so many hours, and the prediction is fulfilled.

[To be continued.]

CLINICAL REPORTS.

FRACTURE OF THE SEVENTH CERVICAL
VERTEBRA.

On the twenty-seventh of September I was called in consultation with my friend G. W. Dilks, V. M. D., to see a past mark of mouth horse at Pitman, N. J.

History.—While driving slowly on the night of the twenty-fourth ult. she stepped into a broken wooden culvert with the near front foot, turned a somersault, and landed on her head; she afterward walked slowly to her stable (three miles away), pulling two persons in a top-buggy.

When unhitched, it was noticed that she staggered, and shortly she became very wild; indeed, almost uncontrollable. Dr. Dilks was sent for, and being^t satisfied that he had considerable cerebral pressure to deal with, he bled her freely (a service of difficulty), and put her on bromid of potassa.

On the twenty-fifth she was somewhat easier, quite rational, but showed no desire for food or water, and moved about the stall with difficulty.

I saw her on the morning of the twenty-seventh, with Dr. Dilks. We found no evidences of mental aberration, pulse of normal time and weak impulse, no dilatation of pupils, great lameness in near front leg, with exhibition of pain on abduction of the limb. All water swallowed returned through the nostrils, inappetence, elevation of head not submitted to. She moved freely about the stall on three legs, and got up and laid down at will, very thirsty, no evidences of paralysis either local or general, a discharge from both nostrils evidently contaminated with the contents of the stomach, with occasional efforts at retching, temperature not taken, dejecta normal. On moving the neck laterally I caught a slight but decided sound of bone grating on bone.

Diagnosis.—Fracture, with little displacement, probably of the third cervical vertebra. The mare became progressively weaker until she died on the afternoon of the first inst., having shown no evidences whatever of paralysis. Post-mortem by Dr. Dilks and myself at noon on September 2 revealed considerable hemorrhage into the nasal sinuses and around the

cribriform plate of the ethmoid, congestion of the larynx and mucosa of the trachea, and *fracture of the seventh cervical vertebra through its annular portion, with a tearing away of the head of the first dorsal vertebra from its intervertebral disk.* There was a large clot surrounding the cord at the seat of fracture and a very considerable increase of the rachidian fluid along the upper part of the cervical portion of the cord. A curious feature of the case, accounting fully for the nasal discharge, was found in the condition of the esophagus, which from the seat of the fracture to the pharyngeal opening, was crammed with well-masticated food, while the stomach was nearly empty, its contents being fluid; erosions were found on the esophageal mucosa in the neighborhood of the fracture, but I should imagine that the difficulty in deglutition was nervous, not mechanical, as there was a marked constriction below the fracture and no pressure to account for the difficulty in deglutition. Taking it all in all I think this a very unique case, when the fact that the mare pulled her load home, and lived five days in the condition above described, is taken into consideration.

T. B. ROGERS, D. V. S.

CYSTIC LITHOTRITY IN A GELDING.

The patient, a bay gelding, nine years old, weight 1025 pounds, in fair flesh, entered the hospital of the Veterinary Department October 12, 1895.

History.—For a year or more the owner, Dr. W. L. Martin, of Rancocas, N. J., had noticed that the horse urinated very frequently and with apparent pain, and that after exercise the urine was latterly tinged with blood. Dr. E. A. Conrow was called in and diagnosed cystic calculus, and recommended that the animal be sent to the University for an operation.

Standing quietly in a single stall the animal voided a few ounces of normally colored urine at intervals of fifteen to thirty minutes. On standing, a grayish precipitate consisting of mucus, epithelial cells and calcium and magnesium salts collected in abnormal quantity at the bottom of the vessel. The act of urination was of itself significant. With great deliberation and frequent turnings of the head toward the flanks the animal would extend itself to its full length and

void urine in a small, irregular stream, accompanied by suppressed grunts and followed by most violent straining which was persisted in for upwards of a minute.

Rectal examination revealed the existence of a hard, rough body somewhat larger than a closed fist in the centre of the tightly contracted bladder. Prostates were apparently normal in size. Upon passing a catheter into the bladder and using it as a sound, the enlargement was recognized to be a stone by its solid impact against the end of the catheter.

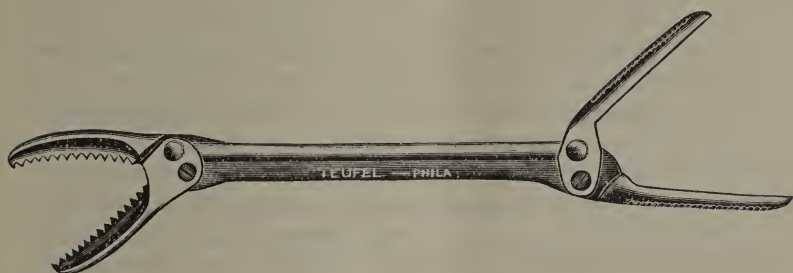
Operation.—Three operations for removal of large calculi without crushing have been proposed—namely, supra-pubic cystotomy, rectal cystotomy and perineal cystotomy, but any cystotomy is very dangerous and apt to be followed by septic paraproctitis and septic peritonitis, ending in death. I chose, therefore, perineal urethrotomy and prepared to crush the stone and extract it in fragments.

To my surprise, when I looked about for a lithoclast I found that there were none available which could be introduced into the bladder by way of the pelvic portion of the urethra, opened sufficiently to grasp so large a calculus, and had then sufficient power to crush it. From approximate measurements *per anum*, I concluded that the jaws of any instrument, in order to grasp this stone, would have to be at least three inches in length, with a separation of two inches or more. Inasmuch as the pelvic portion of the urethra is seven inches in length with an average diameter, when fully dilated, of but one to one and one-third inches, it was evident that the lithoclasts of Bouley and of Dolbeau, which are usually recommended, could not be used, because the urethral incision would not permit the separation of the handles to an extent sufficient for the grasping of the stone. The lithotrites of Keyes, Gouley and Bigelow could not be used because if the jaws were made long enough to hold this stone, the deflection of the jaws from the long axis of these instruments would prevent their introduction through the comparatively narrow and straight pelvic portion of the urethra to the bladder. I determined, finally, to modify Gouley's plain, single-lever lithoclast, for this instrument has great crushing power, and, what is especially important, its jaws may be opened widely without separating the handles.

The accompanying figure furnished me by J. J. Teufel & Son, the makers of the instrument, accurately represents it as

completed. The strong and sharp teeth are so guarded by the overhanging edges of the jaws that the danger of pinching the mucous membrane of the bladder between the jaws and the stone is very small, and the teeth being arranged in a single line, give the greatest possible concentration of the force used.

After a fast of twelve hours the horse was cast, placed in the dorsal position and chloroformed. The rectum was washed out; the perineal region soaped, scrubbed and rendered antiseptic. A catheter was passed into the bladder and an incision beginning one inch below the anus was prolonged nearly to the ischial arch, passing through the skin and subcutaneous connective tissue, the transverse perineal and ischio-anal muscles, between the accelerators urinae, through the cavernous tissue of the urethra and mucous membrane to the catheter. This incision was made longer near the skin than in the



urethra, so as to favor the free flowing away of urine and wound secretions and diminish the danger of infiltration of the tissues by the urine.

As the catheter was withdrawn the closed lithoclast was passed slowly through the intra-pelvic portion of the urethra till the jaws were just passing the neck of the bladder, when the handles were forcibly separated and for ten minutes the neck was subjected to a firm and strong dilatation by means of the opening jaws. The left hand was then passed into the rectum and the bladder held in the palm—the back of the hand resting upon the sacrum.

I found but little urine in the bladder, and its walls so firmly contracted upon the calculus that I could with difficulty open the instrument sufficiently to embrace the stone. I thereupon dilated the sac with a warm $\frac{1}{2}$ of 1 per cent solution of

carbolic acid from time to time, so as to facilitate the manipulation of the stone and to lessen the irritation of the bladder by the stone, and, incidentally, to lessen the danger of pinching the mucous membrane with the lithoclast. After one or two attempts I got a firm hold upon the stone and after turning the instrument completely around upon its long axis, to make sure that the bladder was not caught, I crushed it into two pieces with the strength of one hand. This does not indicate that the calculus was soft, by any means, for I may say that I had previously found no difficulty in crushing big lumps of Lehigh anthracite coal in the same manner. After two hours of careful manipulation I succeeded in comminuting, and extracting with the curved, spoon-billed lithotomy forceps seven ounces of concretion. The bladder was thoroughly washed out, and after a period of one-half hour the animal was allowed to rise.

To combat the intense straining which came on shortly, I washed out the bladder with a 2 per cent solution of cocain and had the animal led about for an hour. The straining ceased soon after the cocain was used, but returned an hour later, when I effectually relieved it by an injection of belladonna, and it soon after disappeared to return no more.

For several days the bladder was washed out twice in every twenty-four hours alternately with a saturated watery solution of salicylic acid and a 2 per cent solution of boric acid. Salol was given internally to further disinfect the urine, and salines to keep the feces soft. I did not suture the urethral wound, preferring to leave it open for cleansing purposes, and feeling that the possible gain of a few days in the closure of the wound would scarcely justify the risk of perineal abscess from infiltration of urine, which would be quite apt to accumulate between buried sutures and those in the external skin.

One week after the operation the patient was discharged, and a week later was driven as usual, the wound having nearly closed. Stricture and urinary fistula follow this operation, but very rarely.

Examination of the calculus has since shown it to be composed largely of calcium oxalate, with some triple phosphates and calcium carbonate. It seems to have been formed by a firm agglutination of an immense number of shot-like, roughened grains arranged in a distinctly radiate manner.

JOHN W. ADAMS.

STATE BOARD OF VETERINARY MEDICAL EXAMINERS.

The State Board of Veterinary Medical Examiners of Pennsylvania was convened at Harrisburg at 12 m. on November 13, in accordance with a call issued by the secretary of the Commonwealth. The board being duly sworn into office by the Department of State, Dr. W. Horace Hoskins was made temporary chairman, and Dr. S. J. J. Harger secretary *pro tem*. All the members of the board were present.

The first order of business being election of permanent officers, Dr. S. J. J. Harger was nominated for president by Dr. Harry Walters, and Dr. W. Horace Hoskins for secretary by Dr. J. C. McNeil. No other names being placed, the election was made by acclamation, upon which the officers assumed their respective places.

The question of adopting suitable by-laws for the government of the board was taken up for consideration, and after considerable discussion on the subject, a motion was made that the chair appoint a committee of three to prepare suitable rules to be submitted to the entire board for adoption at the next meeting, and that they also draft a suitable form of license to be presented at the same time.

The secretary was instructed on motion to procure a minute-book and a suitable registration book.

Deputy Secretary Burnett was then asked to inform the board as to the intent of the act so far as placing on the seal of the State, and the board was informed that all licenses granted would have to be returned to the Department of State at Harrisburg to receive there the seal of the Commonwealth.

It was also suggested to the Committee on Rules and By-laws that the officers be elected annually. It was also decided that two regular meetings be held each year in the latter part of April and June, with such other meetings as the business of the board might demand.

The subjects for examination were assigned as follows: Anatomy, Veterinary Diagnosis and Zoötechnics, Dr. S. J. J. Harger; Practice of Medicine, Dr. W. Horace Hoskins; Obstetrics, Meat and Milk Inspection and Sanitary Medicine, Dr.

J. W. Sallade ; Surgery and Physiology, Dr. Harry Walters ; Pathology, Chemistry, Materia Medica and Therapeutics, Dr. J. C. McNeil. The age of the applicants, their moral character and genuineness of their diplomas, were placed in the hands of the secretary.

It was also decided that a list of fifteen questions on each branch would be submitted to the applicants, from which they should select ten for answering. Applicant shall draw one from a box of cards with numbers upon them, upon which he shall write his name and place the same in a sealed envelope, and shall designate his answers to the questions on the various subjects by the same number. This card shall be placed in the keeping of the secretary. It was decided that a general average of 65 per cent shall have been attained, and that a minimum of 50 per cent must be attained on each branch.

It was moved and seconded that the April meeting shall convene for two days. It was decided that the first regular meeting of the board for examination of applicants for license shall convene on the third Monday in December at the office of the secretary, 3452 Ludlow street, Philadelphia, Pa., and that notices of the same be sent to the veterinary journals of North America.

The chairman then appointed the following Committee on Rules and By-laws: Dr. W. Horace Hoskins, chairman ; Dr. J. W. Sallade and Dr. Harry Walter, after which a motion to adjourn prevailed.

W. HORACE HOSKINS,
Secretary.

THERAPEUTIC NOTES.

TREATMENT OF AURICULAR CATARRH WITH CHROMIC ACID.

Imminger employs with success a 3 per cent aqueous solution of chromic acid. After having carefully cleaned the ear with injections of tepid water, 10 to 20 drops of the chromic acid solution are dropped into the ear. The base of the ear is then massaged for two minutes in order to spread the solution over a larger area. The ear is again cleaned with tepid water and a tampon of cotton inserted into the hiatus. This treatment is repeated every two days. Imminger remarks that the diseased surface is colored yellow by the chromic acid which reveals the extent of the diseased area.—*Journ. de Méd. Vét. et de Zoötech.*, August, 1895.

OIL OF TAR IN THE TREATMENT OF ECZEMA. (LEISTIKOW).

R	Oil of tar	3 parts.
	Alcohol, 95 %	2 "
	Sulphuric ether	1 "
	Mix.	

PREPARATION AGAINST INSECT BITES.

R	Ammonia	1 dram.
	Collodion	45 drops.
	Salicylic Acid	5 grains.

Mix. Apply a few drops upon the bitten or injured parts.

—*Journ. de Méd. Vét. et de Zoötech.*, August, 1895.

FORMULA FOR THE TREATMENT OF WARTS (PALM).

R	Salicylic acid	1 part.
	Lactic acid	
	Collodion, aa	2 "

Mix. Apply twice daily.

—*Journ. de Méd. Vét. et de Zoötech.*, August, 1895.

ABSTRACT.

ABNORMALLY LARGE CALF.

The cow, a Durham, had labor pains for twelve hours ; the presentation was normal. Twelve assistants were required to extract the calf with ropes. There was no complication except slight lacerations of the vulva. The calf weighed 180 pounds.—*Rec. de Méd. Vét.*, Aug., 1895.

LARGE BRAIN IN A HORSE.

The animal ^{*} was a draft horse, seven years old. The brain, removed after death by a knacker, weighed 34 ounces. The mean weight of the horse's brain is $23\frac{1}{2}$ ounces.

The convolutions were more numerous, the fissures deeper and the cerebellum larger than usual. There was no neoplasm and the author, Mettam, considers this only a normal brain unusually developed. Before death there was nothing unusual in the conformation of the head, excepting, perhaps, the cranial bones appearing thicker than ordinary.—*Veterinarian*, May 1895.

URINOUS TUMOR.

Following a difficult parturition in a heifer, a large, round fluctuating tumor, as large as a man's head, formed on the internal face of the tibial region. Capillary puncture showed the tumor to be filled with a clear, yellowish liquid, with a urinous odor. A vaginal examination revealed a wound in the floor of the vulva posterior to the meatus urinarius, communicating by a subcutaneous fistulous tract with the cavity of the tumor. At each micturition a small quantity of the urine entered the cavity of the tumor through this fistula.

The treatment consisted in occluding the vulvar wound with an application of collodion, 1 to 30. There was no complication except small abscesses along the fistulous tract, and a cure was obtained in ten days.—*Ibid.*

PRODROMIC SYMPTOMS OF ACTINOMYCOSIS.

Buti has often observed abundant pytalism without any appreciable cause, which was persistent or ceased spontaneously. At the end of about a month or more an actinomycotic tumor appeared in the mouth or on the jaw. The author now treats abnormal salivation with iodide of potassium, in daily doses of two drams, which suppresses the pytalism, as well as the subsequent development of actinomycosis. He also attributes to the development of some obscure tumor of this nature the roaring heard in certain animals while eating or ruminating. The trouble disappears after the use of iodide of potash.—*Revue Vét.*, Oct., 1895.

THE TREATMENT OF HEMATURIC PARAPLEGIA.
(AZOTURIA.)

MM. Joquan and Greiner.—Cold applications are made upon the loins by means of ice-bags or a cloth continually wet with very cold water.

It is well to administer diuretics, such as acetate of potash and bicarbonate of soda. The authors add that vesicating friction is always injurious, and that refrigeration, even in cold weather, has never been followed by reperussion upon the respiratory organs. Out of thirty-two cases, eighteen were cured by cold applications to the loins; the cases of death were due to the employment of revulsives.

Cagny, recalling the existence of colic often at the commencement of the disease and an excessive accumulation of excrement in the posterior portion of the bowels, thinks that the paraplegia is primarily a surcharge of the intestines determining, by compression of the abdominal vessels, colicky pains with congestion and a diminution or complete arrest of the functions of the kidneys. This is corroborated by an observation of Desban, in which a calculus developed in the pelvis has produced, by compression, death, with symptoms of paraplegia.

Cadiot believes in the infectious origin of the paraplegia. This disease should be placed in the group of toxemias and is caused by intestinal microbes which, under the influence of physico-chemical modifications of the medium, acquire an abnormal virulence and secrete soluble poisons of extreme activity.

Lignières says that he was successful in isolating, in most of the cases which he has studied, a microbe which to him appears specific.

Lavalard and Chuchu believe that the disease is caused by an accumulation of waste products during rest; since the suppression of a large quantity of the ration during rest by the *compagnie des omnibus*, cases of paraplegia are very rare. They were formerly from 150 to 200 for 8000 horses.

Butel thinks that there are three forms of paraplegia. The first form studied by Comény has contagious characters; the second is due to congestion of the spinal cord (Trasbot); the third is the hemoglobinuric form which yields only to cold water, bleeding and rest.—*Société centrale*, July, 1895.

CONCLUSIONS DEDUCED FROM INTRAVENOUS INJECTIONS OF MALLEIN.

The following is a résumé of the physiological effects from intravenous injections of mallein :

1. Solipeds, especially the ass, are most sensitive to the action of this toxin; this is quite logical, knowing the source of the agent and the receptivity of solipeds to the microbes of glanders.

It is none the less certain that dogs are also sensitive to mallein, but, in proportion to their weight, larger doses are necessary to produce equivalent effects.

2. In relation to the heart, it is proved that in the dog and in the ass injections of mallein first slow this organ with a very decided increase of the impulse. The latter effect is very marked in the ass, and in this respect allies mallein to pneumobacillin.

In the second period of the intoxication the heart beats are accelerated and less strong; this is especially so in the dog.

3. After the first injections of mallein the carotid pressure is at first augmented, the blood pressure oscillates up and down and finally descends *slowly and progressively* much below the normal.

The increased blood-pressure at the commencement is due in part to a vaso-constrictor action and partly to increased energy of the heart.

4. After injection into a vein mallein produces upon the nervous system exciting effects very marked in the dog and also in the ass, but more rapidly followed in the latter animal by general depression.

5. Among the organic effects produced by the toxin of the microbe of glanders, it is necessary to note glandular hypersecretion manifested in the dog by excessive functional activity of the salivary and digestive glands, and in the horse by excessive perspiration.

In the dog there is increased intestinal peristalsis.

6. Finally, with the experiments with mallein a very interesting peculiarity has been observed in that the most characteristic and most dangerous toxic manifestations do not appear immediately after the introduction of the poison into the nervous system, but are developed slowly and become apparent only after some time, at times several hours after the injection.

RULES AND REGULATIONS FOR THE RESTRICTION AND PREVENTION OF ANTHRAX, OR CHARBON.

ISSUED BY THE TENNESSEE STATE BOARD OF HEALTH.

Anthrax, charbon, or malignant pustule, may be defined as an infectious disease caused by a specific bacterium, known as the *Bacillus Anthracis*. While it is confined chiefly to cattle and sheep, it may be transmitted to goats, horses, small animals, such as cats, rats, mice, rabbits, and even to reptiles and fish, and certain kinds of game. It may also be transmitted to man. Hogs and dogs are the least susceptible of any known animals. *

It has long been known that anthrax bacillus thrives best under certain conditions of soil, especially one having a subsoil of impervious clay, and in localities subject to inundations. Fields containing stagnant pools are, in warm climates, a prolific source in the propagation of the infection. Having these conditions in spring, followed by a hot, dry summer, is most conducive to the multiplication and dissemination of anthrax bacilli whenever once introduced.

Another source of the virus, and a very important one, is the carcasses of animals which have died of anthrax. In such bodies the bacilli are present in enormous numbers, and whenever blood or other fluids from such carcasses are exposed to the air, the formation of spores will go on with great rapidity, and they possess great tenacity of life, resisting alike the coldest winters, and very high degrees of heat.

It will thus be understood how this disease becomes persistent in a given locality, and appears from year to year through an indefinite period of time. Thus two agents are at work in maintaining the disease in any locality affected—the soil and meteorological conditions and the carcasses of animals that have died of the disease.

The spores of anthrax bacilli correspond to the seeds of plants, and are usually the agents of infection, and are taken into the system with the food or water used, and through wounds or abrasions of the skin. The spores, after remaining in a dry condition for many years, when furnished suitable environment, reproduce the disease in all its virulence.

The symptoms vary considerably according to whether the disease begins in the skin, the lungs or the intestines. When it manifests itself in the skin swellings will appear as 'edemas and carbuncles. The former are doughy tumors of a flattish form passing gradually into the surrounding tissue. When they are cut open they are found to consist of a peculiar jelly-like mass of a yellowish color, more or less stained with blood. The carbuncles are firm, hot, tender swellings, which later undergo mortification. The swellings and carbuncles may also appear in the mouth, tongue, throat and rectum.

When the disease commences in the lungs or intestines, either the acute or sub-acute form is observed. In the former the animal usually dies suddenly, as if of apoplexy. The animal, without having shown signs of disease, suddenly drops down in the pasture and dies of convulsions, or an animal apparently well at night is found dead in the morning. In the latter, or sub-acute form, without external swellings the disease begins with high fever; the temperature may reach 106° to 107° F., the pulse beats from 80 to 100 per minute, feeding and rumination suspended. Chills and muscular tremors may appear and the skin show uneven temperature. The ears and base of the horns are cold, the hair rough, and the animal is dull and manifests great weakness.

The following rules and regulations are adopted by the State Board of Health of Tennessee for the restriction and prevention of anthrax :

1. When anthrax has made its appearance in any locality, all cattle and other animals found upon the affected pasture, or running at large in the vicinity, shall be quarantined upon uninfected premises for a period of not less than thirty days for observation, and at the expiration of that time, if apparently well, they shall be removed to pastures known to be free from infection.

2. All cattle or other domestic animals known or suspected to be afflicted with anthrax must be kept on the premises where found.

3. The carcasses of all cattle or other animals known to have died of anthrax must be disposed of in either of two ways, and as near the spot where death occurred as possible.

(a) By far the most preferable is by burning on the spot where death occurs. This is best accomplished by placing the carcass on the fuel and adding more after the fire has been started. (b) By burying to the depth of at least six feet, with quick lime placed under, around and over the body. All ground touched by the carcass must be freely sprinkled with chloride of lime.

4. When the bodies are removed some distance, the ground and all objects which come in contact with the carcass, and the ground over which the animal has passed, must be sprinkled with powdered chloride of lime. All wagons, utensils, etc., must be washed with a five per cent solution of chloride of lime. When stables have been infected they must be thoroughly cleansed and the refuse matter burned, and floors freely sprinkled with chloride of lime, and the walls washed with a solution of same, made by adding three ounces of the powdered chloride of lime to two quarts of water. The food and water supply must be carefully protected from contamination with the manure or other fluid discharges of the sick.

5. The hides of animals known to have died of anthrax shall not be removed, but must be destroyed with the carcass. The removal of carcasses to a rendering establishment is strictly prohibited, as the same is always fraught with danger, both to men and animals.

6. All pasture lands or commons known to be infected must be quarantined indefinitely for grazing purposes; the vegetation should be allowed to grow and then burned off in the fall, after which the ground should be cultivated for a number of years before it can be again safely used for pasturing. On uncultivated lands, swamps and ponds should be thoroughly drained or filled. When this cannot be done, the infected tracts must be fenced so as to prevent the entrance of all domestic animals.

PROCEEDINGS OF SOCIETIES.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The meeting of the Keystone Veterinary Medical Association was held at their new quarters, northwest corner Broad and Filbert streets, at 8 P. M. November 12, with President Hart in the chair. Those in attendance were Drs. T. B. Rayner, W. S. Kooker, J. B. Rayner, C. Lintz, J. R. Hart, W. H. Hoskins, F. Bridge, J. C. McAnulty and W. L. Rhoads.

Dr. Hoskins, as chairman of the legislative committee, reported that the State Board of Veterinary Medical Examiners would meet at Harrisburg for organization on the 13th at 12 o'clock, the governor having made the following appointments; Drs. W. H. Hoskins and S. J. J. Harger, both of Philadelphia, for three years; Drs. J. C. McNeil, of Pittsburg, and Harry Walters, of Wilkesbarre, for two years, and J. W. Sallade, of Pottsville, for one year.

The question of the board accepting the diploma of any school as sufficient, without an examination by the board, was broached and very vigorously protested against, as the board would thus be shirking its duties and responsibility as well as evading the law.

It was moved and unanimously adopted as the sense of this association, that all who enter the practice of veterinary science in Pennsylvania, must pass the examination by the board.

Dr. Hoskins asked for information regarding true hemorrhoids in the horse, as he thought such a condition impossible on account of anatomical structure and position. He stated his inability to find a record of such cases in veterinary literature for the last fourteen years.

This question was spoken upon at some length by Drs. J. B. Rayner, W. S. Kooker, T. B. Rayner, F. Bridge and C. Lintz. Though they spoke of the hemorrhoidal condition often found, they agreed that they had never seen true hemorrhoids in the horse.

Dr. Kooker mentioned an affection among some horses under his care. They could not be induced to eat and became very dull, and when driven had diarrhea; otherwise were normal.

Dr. Hoskins spoke of a pony two and a half years old, taken with osteoporosis when in the best of health, having gained over one hundred pounds within a year.

Meeting adjourned to reconvene December 10.

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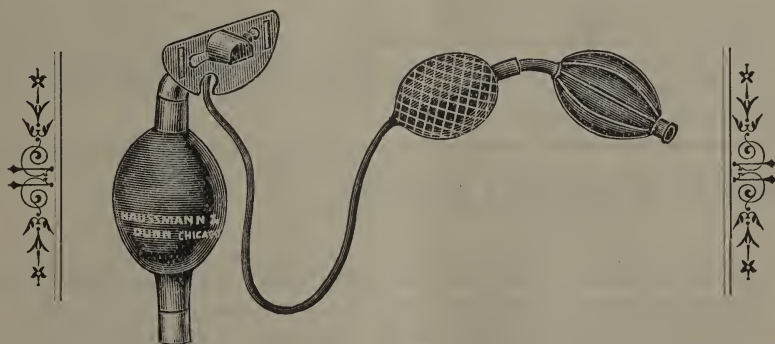
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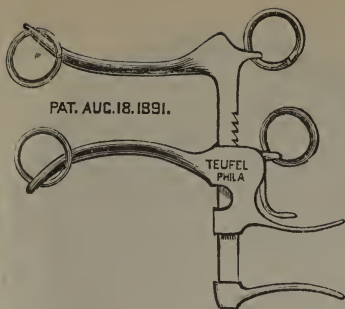
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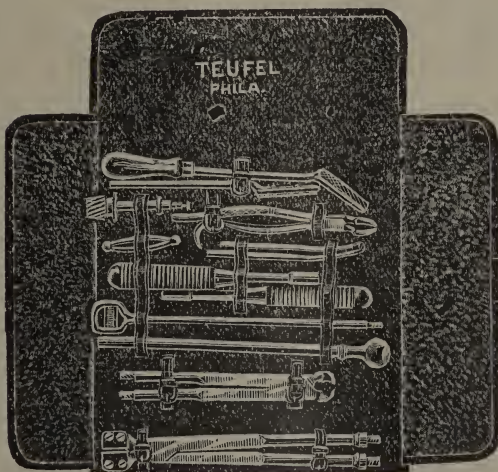
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